DOCUMENT RESUME

ED 261 224 CE 042 443

TITLE	Development of a School of Science and Technology.
INSTITUTION	Bergen County Vocational-Technical High School, Hackensack, N.J.
SPONS AGENCY	New Jersey State Dept. of Education, Trenton. Div. of Vocational Education and Career Preparation.
PUB DATE	85
NOTE	194p.
PUB TYPE	Reports - Descriptive (141) -- Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Course Content; Curriculum Development; Educational Facilities Design; *Educational Facilities Planning; Educational Needs; Educational Philosophy; *Gifted; High Schools; Mathematics Education; Needs Assessment; Program Development; Public Relations; *School Organization; School Policy; School Surveys; *Science Education; Talent; *Technical Education; *Vocational Schools
IDENTIFIERS	*New Jersey (Bergen County)

ABSTRACT

A project was conducted in Bergen County, New Jersey, to develop a technical high school for students who are gifted and talented in science, mathematics, and the technologies. Through a hands-on approach to learning, the curricular disciplines were integrated to bring life and meaning to abstract principles and theories and to give students an opportunity to release their own creative energies by discovering practical links between theory and physical reality. Research and analysis for the project included two detailed studies in Bergen County--one that questioned local superintendents and one that examined student performance in advanced placement examinations. Research also included a study of American education in science and mathematics and a review of national reports. Educators from the county, from other technical high schools, and from universities were consulted during the development of the project. The work was performed by a researcher hired exclusively for this project, as well as three other staff persons and the school superintendent. As a result of the research, the following products were created: (1) a philosophy and framework for the technical high school; (2) a four-year curricular plan that included mathematics, physics, computer science, chemistry, biology, mechanical and electronic technologies; (3) procedures for selection of students, facilities and equipment, teaching and counseling staff, school schedule, and transportation procedures; and (4) public relations efforts. (Supporting documents are included in this report.) (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED261224

85-132-
SEMG-572

DEVELOPMENT

OF A

SCHOOL OF SCIENCE AND TECHNOLOGY

1984-85

Bergen County Vocational-Technical Schools

200 Hackensack Avenue

Hackensack, New Jersey 07601

(201) 343-6000

Project Director
John Grieco, Ed.D.
Superintendent of Schools

CE042443

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been raproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L F Price

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY

This project reported herein was conducted pursuant to a contract from the New Jersey Department of Education, Division of Vocational Education and Career Preparation. It was funded under Section 133 of Public Law 94-482.

Project Duration: September 1, 1984
Beginning Date

June 30, 1985
Ending Date

The Contractors undertaking this project were encouraged to express fully their judgments in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official funding agency positions or policies.

OFFICIAL USE ONLY

IDENTIFICATION NO. SEMG-599 AMOUNT FUNDED $35,000.

FUNDED UNDER SECTION 133 OF P. L. 94-482

PROJECT TITLE: DEVELOPMENT OF A SCHOOL OF SCIENCE AND TECHNOLOGY

LEGAL NAME OF APPLICANT DISTRICT, INSTITUTION OR AGENCY: Board of Education of the Vocational School in the County of Bergen

ADDRESS: 200 Hackensack Avenue

Hackensack, New Jersey 07601

PROJECT DIRECTOR: Dr. John Grieco, Superintendent

TELEPHONE NUMBER: (201) 343-6000
(Area Code)

ABSTRACT

DESCRIPTION OF PROJECT

(Use this sheet and no more than one other to type in single-spaced form a statement of project objectives, procedures that were followed, state and local priorities emphasized and the expected contribution of the project to vocational education.)

OBJECTIVES:

The aim of this project was to develop a technical high school for students who are gifted and talented in science, mathematics and the technologies. Using a hands-on approach to learning, the curricular disciplines were integrated to bring life and meaning to abstract principles and theories and to give students an opportunity to release their own creative energies by discovering practical links between theory and physical reality. Toward this aim the following objectives were set forth:

1. To develop a philosophy and framework for the establishment of a countywide science and technology center for secondary students.
2. To develop a four-year curricular plan which included mathematics, physics, computer science, chemistry, biology, mechanical and electronic technologies.
3. To investigate and recommend procedures for selection of: students, facilities and equipment, teaching and counseling staff; for structure of the school schedule; and for transportation procedures.
4. To develop a public relations policy to promote the new school.
5. To undertake a comprehensive analysis in Bergen County of the need for a school of science and technology.

PROCEDURES:

Research and analysis for this project included two detailed studies in Bergen County--one which questioned local superintendents and one which investigated

student performance in AP examinations. Research also included a study of American education in science and mathematics and a review of national reports. Educators from the county, from other technical high schools and from universities were consulted during the development of the project. The work for this project was performed by a researcher hired exclusively for this project, as well as three other staff persons and the school superintendent.

CONTRIBUTION TO EDUCATION:

This project addressed state and local priorities in its focus on improving the quality of technical, scientific and mathematics education for secondary students. The project demonstrated a need in Bergen County, as well as a gap in educational opportunities for gifted students in Bergen County. The project represents a significant change in the educational delivery system for gifted students in Bergen County and offers opportunities for outstanding scholarship.

Statement of Problem

The impetus for this development project was the extensive concern expressed about the level of education in science, mathematics and techology in the U.S.A. This concern transcended to Bergen County where small local school districts with small high schools are commonplace. A school of science and technology in one central location, it was posited, could provide a wide range of high level learning experiences for gifted students from all sectors of the county.

Objectives

The following objectives were set forth for this project:

1. To develop a philosophy and framework for the establishment of a countywide science and technology center for secondary students who have an interest in and aptitude for theoretical and practical technological education.

2. To develop an appropriate four-year curriculum in:

    a. Mathematics
    b. Physics
    c. Chemistry/Biology
    d. Mechanical Technology
    e. Electrical Technology
    f. Computer Science
    g. Extra Curricular Activities

3. To investigate, recommend, and implement the procedures for:

    a. Selection of students
    b. Facilities and equipment
    c. Selection of teaching and counseling staff
    d. Determination of the structure of the schedule (part-time/full-time)
    e. Organization of transportation

4. To develop a public relations policy and program to promote and implement the concept of an exemplary secondary school of science and technology.

5. To undertake a comprehensive analysis in Bergen County of the need for a school of science and technology.

Background Information/Related Research

This information is included in detail within the body of the report.

Procedures

The concept of a school of science and technology and the projected need for such a school formed the base of research and analysis which included but was not limited to the following:

1. a detailed analysis of the state of American education in science and mathematics;
2. a review of national reports on education;
3. a needs analysis for upgraded education in science and mathematics, the data for which was provided by local district superintendents in Bergen County;
4. an analysis of student outcomes in 1984-85 advanced placement examinations in mathematics and science in Bergen County.

The curriculum plan which fully integrates the disciplines of mathematics, science and technology is based on a concept developed at Bergen Tech. This concept is fully explained in the body of the report. Curriculum development work included research and visits to other schools, universities and businesses, as well as original work.

Findings/Interpretation of Findings

This information is detailed in the "Local Analyses" section of this report.

Dissemination Activities

This project was shared with all superintendents of the local school districts in Bergen County, as well as state officials and legislators.

Strategies to Eliminate Sex Bias and Sex Role Stereotyping

The school is committed to the avoidance of all sex bias and sex role stereotyping in counseling, recruitment and instruction, as well as the encourage-

ment of both males and females into careers non-traditional to perceived sex roles.

A strong advocacy program exists and has shown success in the recruitment and training of adult women in technical fields. Advocacy for women is promoted at the administrative level by the Affirmative Action Office for the district. At an operational level, counselors and teachers are aware of the need to make special efforts to enourage women to try a non-traditional field of study. Programmatically, the school sponsors electronics education for women. Termed "Women Working Technical," this project was initially funded through Wider Opportunities for Women in Washington, D.C. The Career Development Center for Women provides a full range of services, some of which deal directly with vocational counseling for non-traditional education, apprenticeships, and employment. The Career Development Center has become one of the largest training centers for displaced homemakers in New Jersey.

In addition, the district has operated a special counseling program to encourage more young women to enter non-traditional fields of study. This advocacy work will be utilized to recruit young women and minority students for the technical high school program.

Conclusions and Recommendations

The following position statement issued by the Board of Vocational Education in August, 1985, provides closure for this project:

> Pursuant to the February 18, 1985 Board Resolution #84-A-55 which approved the conceptual design of the Bergen County School of Science and Technology, and directed the Superintendent to develop implementation plans for the 1986-87 school year, the Board revises its position with regard to the School of Science and Technology. This revised position is the following:

The Board places development of the Bergen County School of Science and Technology and implementation decisions in abeyance to allow time for various educational studies to emerge. It is the Board's position that school programs which it sponsors are cooperative educational undertakings that serve the needs of the students of Bergen County and of the educational community in the County. Since both the State Commissioner of Education and a majority of the Superintendents from local districts in Bergen County believe that the project needs more study, the Board of Vocational Education, as an entity designed to serve county needs for education and training, awaits the results of state and local studies and directs the Superintendent and designees from his staff to participate in such studies.

The Board rescinds its target start up date of September, 1986 for the School of Science and Technology and its directive that the Superintendent proceed with implementation plans. The Board further directs the Superintendent to become involved in the State Commission studying math and science education in New Jersey and in other local committees developed for countywide studies of math and science education. Further, utilizing existing staff and resources, the Superintendent is directed to engage staff actively in state and local studies and in curriculum development. Finally, the Superintendent is directed to pursue a widening of the technical high school concept by exploring the feasibility of offering summer, twilight and/or Saturday programs in the technologies for gifted and talented students.

THE BERGEN COUNTY SCHOOLS

OF

SCIENCE AND TECHNOLOGY

John Grieco, Ed.D., Superintendent
Bergen County Vocational-Technical Schools
200 Hackensack Avenue
Hackensack, NJ 07601
(201) 343-6000

TABLE OF CONTENTS

Page

Origin and Philosophy of the School

Introduction to the Bergen County School of Science and Technology 2
Mission 2
A Dedication to Excellence 3

The Board of Vocational Education in the County of Bergen as Sponsor of the Bergen County School of Science and Technology

Appropriateness of the Board of Vocational Education as Sponsor of the New School 5
Mathematics as an Indicator of the Educational Levels of District-Sponsored Programs 5

Framework of the School

Conceptual Framework 8
Student Framework: Profile and Demography 8
Curricular Framework 9
Operational Framework 9
- Projected Size of School
- Shared-Time Program
- Full-Time Program
- Individual Courses
- Student Options Upon Graduation

The School as an Answer to an Unfulfilled Educational Need in Bergen County

Background 14
- State of American Education in Science and Mathematics
- Statement of Need
- Needs of Society and Industry as Related to Available Student Populations
- Available Pool of Students in Bergen County

Related Research 16
- Review of National Reports on Education
- The American Educational System as Related to the Requirements of Science and Technology

Operation of the School

Facilities 21
Faculty 21
Other Staff 23
Financial Resources 23
Transportation 24
Public Relations/Recruitment of Students 24

Page

Students

Admission and Selection of Students 26
Objective
Non-Discrimination Policy for Students
Application Procedure
Criteria for Selection of Students
Admissions Committee
Admission to Individual Courses
Entrance Examination
Exit Requirements 28
Student Personnel Services 29
Guidance and Counseling Services
College Planning
Career Information

Curriculum

Background 32
National Examinations 32
National Contests and Activities 32
Curriculum Patterns for Students 33
Notes on Curriculum 34
Curriculum Summary (Figure 3) 35
Program Outlines (Study Majors)
Mathematics and Physics (Figure 4) 36
Chemistry and Biology (Figure 5) 37
Computer Science (Figure 6) 38
Electronic Technology (Figure 7) 39
Mechanical Technology (Figure 8) 40
Course Descriptions
Physics 41
Mathematics 44
Chemistry and Biology 49
Computer Science 52
Electronic Technology 56
Mechanical Technology 60

Addendum: Local Needs Analyses

BCSA Study of the Proposed School of Science and Technology 65
Survey Instrument (January 22, 1985)
Summary Report of Survey (February 8, 1985)
BCSA Position Statement (March 11, 1985)
Summary of Presentation to the Bergen County Freeholder Board Regarding the Proposed School (May 8, 1985)
Summary of Bergen County Educators' Reactions to the Proposed School (July 18, 1985)

Page

Analysis of Student Outcomes of the 1984-85 Advanced Placement Examinations in Mathematics and Science in Bergen County 111
Introduction
Study of AP Performance
Facts
Assumptions
Other Related Information
Graduation Statistics
Private School Participation Statistics
Bergen County Participation in Westinghouse Competition
Conclusions
Advanced Placement Test Results (1984-85) for Bergen County Public Schools (Figure 1)
Bergen County (High School) Indicators of AP Exam Performance vs. Advanced Course Enrollment (Figure 2)
Distribution of Bergen County AP Test Scores by Percentage in Test Area (Figure 3)
Distribution of National AP Test Scores by Percentage in Each Test Area (Figure 4)
List of Public Schools in Bergen County
List of Advanced Course Offerings

Publicity Package 125

ORIGIN AND PHILOSOPHY

OF THE SCHOOL

... Introduction to the Bergen County School of Science and Technology

... Mission

... A Dedication to Excellence

Introduction

to

THE BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY

The Bergen County School of Science and Technology has as its origins a changing society which places rigorous educational demands upon its populus and a county which now has the responsibility to provide a challenging education to its students who have a high interest in and aptitude for the sciences, mathematics, and the technologies. The name of the school delineates its mission and highlights its stand as perhaps the newest addition to a rather brief listing of schools nationwide that direct their educational programs to scientifically and technically talented secondary school students.

MISSION

The mission of the Bergen County School of Science and Technology is to provide a rigorous and challenging high school program for young people who aspire to be the scientists, engineers and technicians of the 1990's and the 21st century. The school is dedicated to:

...the advancement of learning,
...excellence in education,
...the development of students to their fullest potentials, and
...the preparation of students for their roles as members of the United States society.

The goal of the school is to prepare students for further education and careers in the fields of science and technology and to instill in these students the moral and ethical responsibilities of the sciences and technologies for the betterment of humanity.

A DEDICATION TO EXCELLENCE

As an educational institution dedicated to excellence, the following objectives are set forth:

...To encourage the self-development of its students in a manner that allows each student to function as an individual and as a member of society;

...To instill in each student the social and ethical sense of responsibility to use the knowledge and skills they gain for the betterment of humanity;

...To develop in each student the social skills and maturity generally required to fulfill roles as citizens of the United States society;

...To instill in each student a strong sense of community, which implies respect for the self and others and the establishment of a bond that unites the self with others because of commonalities that are shared and because of the differences that are inherent, as each develops to the fullest potential of his/her own capacity;

...To develop in each student the intellectual processes that contribute to analysis, qualitative and quantitative problem solving, the drawing of inferences and conclusions, and innovative, creative thought;

...To offer an educational curriculum in science and technology that produces outstanding candidates for admission to well respected universities for engineering or scientific study;

...To provide each student with a core curriculum that develops a basic understanding of high technology and to expand that core of knowledge through specialization in a scientific or a technological discipline;

...To carry high school requirements and expectations of students beyond state requirements and those generally set forth for students who choose a college preparatory program by including advanced level classes within the required course of study;

...To demand a level of achievement in school subjects that allows each student to develop to his or her greatest potential;

...To motivate students to demonstrate the extent of their learning by sitting for nationally normed Achievement Tests in subject areas and by following Advanced Placement level courses of study in their major areas of concentration.

THE BOARD OF VOCATIONAL EDUCATION

IN THE COUNTY OF BERGEN

as Sponsor of

THE BERGEN COUNTY SCHOOL

OF SCIENCE AND TECHNOLOGY

...Appropriateness of the Board of Vocational Education as Sponsor of the Bergen County School of Science and Technology

...Mathematics as an Indicator of the Educational Levels of District-Sponsored Programs

APPROPRIATENESS OF THE BOARD OF VOCATIONAL EDUCATION AS SPONSOR OF THE SCHOOL OF SCIENCE AND TECHNOLOGY

The mission of this district has always been to provide education in fields where jobs are currently available in business and industry and to develop students as human beings who can function successfully in a society that requires a sense of morality, ethics, respect for other people and reverence for humanity.

The district is a centrally located county educational center and it is a service-oriented institution. As an educational center, it is implied that the school establishes goals, implements standards, and stands as the community leader in vocational and technical education. As a service-oriented institution, it is implied that the school focuses on students and on the business/industrial community to develop citizens who can function and make a living in a changing society and an emerging technological job market.

Jobs in the high technology fields which the new school targets, however, require a level of education that is very different from that offered in other secondary programs sponsored by the district. The nature of the difference lies chiefly in the area of mathematics for which college level proficiency is required. The new program, therefore, is an extension of the district mission, an extension fostered by the reality of the workplace. In a society where the elements of high technology are rapidly changing the way we work, think about work and prepare for work, one commonality exists--the needs of today were not the needs of yesterday and will not necessarily be the needs of tomorrow. The proposed School of Science and Technology addresses the changing needs of today and presents a sound foundation for meeting the needs of tomorrow.

MATHEMATICS AS AN INDICATOR OF THE EDUCATIONAL LEVELS OF DISTRICT-SPONSORED PROGRAMS

The following description of the basic types of programs offered by the district shows how mathematics can be viewed as an indicator of the educational level required for various programs.

Vocational education, the foundation upon which this district was established, is defined traditionally as hands-on skill development in the trades. This education requires the practical application of arithmetic computation and a limited application of geometry and trigonometry. Masonry and carpentry are examples of vocational education.

Technical education prepares students to work as repairpersons and trouble-shooters in occupations that require a knowledge of applied physics, algebra, geometry and trigonometry. The education includes theory of operation and practical experiences in shop or laboratory settings. Basic machine shop and electrician training are examples of technical education.

Technological education commonly refers to the Applied Associate Degree (A.A.S.) level which prepares persons to work at a level above the skilled craftsperson but below that of the engineer. Examples of this education are the two A.A.S. degree programs in automotive and electrical technology that are conducted by this school in conjunction with Bergen Community College. Students who complete this type of education are equipped to do analytical work and to perform a sophisticated level of troubleshooting. A solid knowledge of algebra, geometry and trigonometry is required, as well as pre-calculus and technical (elementary) calculus and physics.

Science and technology education prepares students for scientific and engineering level college work and includes algebra, trigonometry, geometry, calculus, differential equations, physics, computer science and electrical/electronic technology. Science and engineering require the ability to conceptualize design patterns and to vary and test parameters that will produce the required results. This ability is greatly enhanced and developed by being able to establish mathematical models, scale models of physical devices, and structural forms that can be examined visually on a cathode ray tube display. The training and education provided in the science and technology curriculum will develop these basic skills.

While each of the four levels of education described above differ in the level and complexity of the mathematical components they require, each level brings to life abstract reasoning and mathematical processes through their application in a laboratory, science class or shop environment.

FRAMEWORK OF THE SCHOOL

... Conceptual Framework

... Student Framework: Profile and Demography

... Curricular Framework

... Operational Framework

- ... Projected Size of School
- ... Shared-time Program
- ... Full-time Program
- ... Individual Courses
- ... Student Options Upon Graduation

CONCEPTUAL FRAMEWORK

The Bergen County School of Science and Technology will be considered as an extension of every public and private high school in Bergen County. The new school expects to meet educational needs that are not currently addressed or that cannot be addressed fully due to local budgetary constraints or lack of sufficient enrollment levels to sustain advanced and specialized programs.

Students will be admitted on a competitive basis, with high aptitude for scientific and/or technical education, past performance and student interest being among the determinants for student selection. It is expected that students selected will have completed, or have the ability to complete, ninth grade level work by the end of the eighth grade year. Upon graduation these students will have advanced to the level of a university sophomore in selected major subject areas.

The uniqueness of the program lies in the projection of the fundamental knowledge and skills which will be required of 1990 and 21st century scientists, engineers and technologists. The knowledge and skills that are envisioned for the future form both an operational definition of high technology and the core curriculum for this program. The elements that integrate to form this core are physics, mathematics, electronics and computers. The development of a thorough understanding of the inter-dependencies of these areas in both theory and practice brings clarity and meaning to the principles of mathematics, science, engineering and technology.

Upon completion of the core curriculum, students will specialize in an area of interest. Area specializations are:

(1) Mechanical Technology
(2) Electronic Technology
(3) Computer Science Technology
(4) Chemistry and Biology
(5) Mathematics and Physics
*(6) Bio-technology

The program will develop in each student analytical and quantitative skills, subject matter proficiency and the motivation, team spirit, leadership and social responsibility required of citizens in a rapidly developing and changing technological society.

* Curriculum development in this area projected for the 1985-86 school year.

STUDENT FRAMEWORK: PROFILE AND DEMOGRAPHY

The student body will be derived from all public and private school districts in Bergen County. Students in grades 9-12 will be accommodated. The ages of these students will, in general, range from 13 to 17.

The typical student will fall in the top 5-10 percent of his/her class on a countywide basis and will possess a dedication and seriousness of purpose towards education. The student will desire a challenge in subject areas, will look to peers and instructors for intellectual stimulus, and will have a high aptitude for and interest in the sciences, mathematics and the technologies.

CURRICULAR FRAMEWORK

Programs sponsored by the Bergen County School of Science and Technology are patterned after secondary schools such as the Bronx High School of Science, Stuyvesant High School in Manhattan and Brooklyn Technical High School.

The unique structure of the new school offers all students an introduction to the high technologies in grades 9 and 10 through a core curriculum, as well as the flexibility to specialize in grades 11 and 12 by selecting a field of scientific or technological study. The core curriculum includes mathematics, physics, computer science and electronics. The areas of specialization include advanced level courses in mathematics and science and the application of computers to the solving of mathematical, scientific and technical problems.

Students will be encouraged to enter national scholastic competitions during their high school years and to sit for nationally normed Achievement Tests in major subject areas. Advanced placement courses, which are a part of the curricular programs, provide students with a challenging high school curriculum and the opportunity to advance into college sophomore level courses (in select subject areas) after graduation.

Planning for college and future careers will be an important part of the school program. Students will be given personal assistance through the Student Personnel Services office and through teachers who can provide educational guidance in subject/career-specific areas. In addition, the School plans to explore linkages with colleges and universities to give students firsthand exposure to the college environment and expectations prior to graduation from high school. At a local level, a linkage with Stevens Institute of Technology is already being pursued by the Superintendent.

OPERATIONAL FRAMEWORK

Projected Size of the School

The school is designed optimally to accommodate 500 students attending a full day program. Taking into account that shared-time students attend for a half-day (5-period) program and that students taking individual courses attend for one or two periods, the actual number of students served by the school may exceed 500.

Within a structured academic environment, the school will be designed for flexibility, accommodating the following student groups:

(1) shared-time students,
(2) full-time students, and
(3) students who elect to attend the school for selected advanced placement courses on a per course basis.

Shared-Time Program

Shared-time students will attend the school five periods a day for instruction in mathematics, science and technical subjects. These students will return to their home districts at the lunch break for instruction in English, history, physical education and foreign language, as well as any sports or other extra-curricular activities that they may elect. Local school districts will be encouraged to provide these students with advanced placement/honors courses in the humanities area.

Sample student schedules for grades 9 and 10 are attached as Figures 1 and 2.

Full-Time Program

As the need arises, a full-time program will be provided for students. It is anticipated that full-time students will follow the same morning schedule as shared-time students. Physical education, the humanities subjects (history, foreign languages, English), and elective, after-school activities will be a part of this program. Honors/advanced placement level courses will be offered in the humanities. New courses such as Technical Writing and the Social and Ethical Responsibility of Scientists will be included in this program.

Individual Courses

Students who opt to attend the school on a per course basis may participate in advanced placement level courses in mathematics or science. These students may also elect instruction in one of the technical disciplines to supplement and enrich their high school programs. (Transportation of these students will be the responsibility of the sending school districts.)

Student Options Upon Graduation

The options that will be available for each student upon completion of the program will be:

(1) To enter a college or university program with advanced standing in science, mathematics, and computer technology; or

(2) To enter a highly skilled technical position in the employment market, and to pursue a part-time college program.

Figure 1: A TYPICAL SCHEDULE - SHARED TIME - 9th GRADE

	M	T	W	TH	F	
7:45 - 8:26	Math	Sc	Math	Math	Sc	
8:30 - 9:11	Math	Sc	Sc	Math	Sc	
9:15 - 10:25	CS	ET	CS	CS	ET	)
10:30 - 11:25	CS	ET	ET	CS	ET	) 3 class periods)
11:45 - 12:30	TRANSPORTATION (Return to sending school)					
12:30 - 1:00	LUNCH*					
1:00 - 1:45	Eng	Eng	Eng	Eng	Eng	
1:45 - 2:30	H/L	H/L	H/L	H/L	H/L	
2:30 - 3:15	PE	PE	PE	PE	PE	

*OPTION: Lunch service could be provided to students by the School of Science and Technology before their return to the sending schools.

SC: Science (Physics)

ET: Electrical Technology

MT: Mechanical Technology

CS: Computer Science

Eng: English

H: History

L: Language

PE: Physical Education

Figure 2: A TYPICAL SCHEDULE - SHARED TIME - 10th GRADE

	M	T	W	TH	F
7:45 - 8:26	Math	Sc	Math	Math	Sc
8:30 - 9:11	Math	Sc	Sc	Math	Sc
9:15 - 9:56	ET	MT	CS	ET	MT
10:00 - 10:41	ET	MT	CS	ET	MT
10:45 - 11:26	CS	MT	CS	ET	CS
11:45 - 12:30	TRANSPORTATION (Return to sending school)				
12:30 - 1:00	LUNCH*				
1:00 - 1:45	Eng	Eng	Eng	Eng	Eng
1:45 - 2:30	H/L	H/L	H/L	H/L	H/L
2:30 - 3:15	PE	PE	PE	PE	PE

*OPTION: Lunch service could be provided to students by the School of Science and Technology before their return to the sending schools.

SC: Science (Semester 1: Physics; Semester 2: Chemistry)

ET: Electrical Technology

MT: Mechanical Technology

CS: Computer Science

Eng: English

H: History

L: Language

PE: Physical Education

THE SCHOOL AS AN ANSWER TO AN UNFULFILLED EDUCATIONAL NEED IN BERGEN COUNTY

Background

... State of American Education in Science and Mathematics

... Statement of Need

... Needs of Society and Industry as Related to Available Student Populations

... Available Pool of Students in Bergen County

Related Research

... Review of National Reports on Education

... The American Educational System as Related to the Requirements of Science and Technology

BACKGROUND

State of American Education in Science and Mathematics

Extensive concern has been expressed about the level of education in science, mathematics, and technology in the United States. The National Board on Precollege Education in Mathematics, Science and Technology opens its 1983 report titled Educating Americans for the 21st Century with the following statement:

> The Nation that dramatically and boldly led the world into the age of technology is failing to provide its own children with the intellectual tools needed for the 21st century.

The extent to which the technologies will better serve society depends, in large measure, on the availability of scientists, engineers and technicians who can develop, apply, maintain, and service elements of the technologies. William C. Missimer, Jr. in his article "Business and Industry Role Is Improving the Scientific and Technological Literacy of America's Youth" (T.H.E. Journal, February, 1984) makes the following statement:

> Math and science are the basic building blocks of technology; if they decline any further in the United States, our future as an economic power will be jeopardized. Instead of producing the "world-class students" needed to compete on a world-class scale, we are producing technological illiterates.

A Nation at Risk: The Imperative for Educational Reforms, the 1983 report prepared by the National Commission on Excellence in Education, includes the following statement concerning the state of education in science and mathematics:

> These deficiencies come at a time when the demand for higher skilled workers in new fields is accelerating rapidly. For example, computers and computer controlled equipment are penetrating every aspect of our lives, homes, factories, and offices. One estimate indicates, by the turn of the century, millions of jobs will involve laser technology and robotics. Technology is rapidly transforming a host of other occupations.

In answering the question "What needs to be done?", this report proposes several guidelines for education. Among them are:

(a) building a strong and lasting national commitment to quality mathematics, science and technology education for all students; and

(b) establishing exemplary programs--landmarks of excellence in every community--to foster a new standard of academic excellence.

The School of Science and Technology aims to bring recommendations such as these into reality for the students of Bergen County so that they may be prepared with a level of education required to meet the future challenges of an evolving society that defines itself to a significant degree by its technology.

Statement of Need

Northwestern University conducted a survey in 1982 to determine the opportunities that could be available for youth in the years to come. One hundred and twelve corporations responded to the survey and predicted an increase of 31 percent in their demand for technical personnel as early as 1987. The essential areas indicated were the electrical, mechanical and computer science fields.

Within Bergen County and in contiguous areas, there are a large number of industrial facilities, hospitals, and research/development centers that are engaged in scientific, engineering, and technical work. The projections for employment in Bergen County over the next several years show a continued level of employment in the high technology areas.

Needs of Society and Industry as Related to Available Student Populations

With the general decline in secondary school populations in Bergen County--a decline that is not expected to reverse until 1990--comes the inability of schools to offer a wide variety of advanced courses to the 5-10 percent of the student population that are capable of performing at a high level. This inability can be correlated directly to budgetary resources that often do not permit a district to develop and operate a class for a handful of students. This issue becomes even more critical in the areas of science and technology. Classes in those areas require a significant dedication of financial and physical resources due to substantial equipment and supply needs--needs that often change quickly due to the evolutionary nature of science and technology.

The centrality of the Bergen County School of Science and Technology makes the school a cost effective way to meet educational obligations to county high school students who have the interest and ability to excel in these fields of study.

Available Pool of Students in Bergen County

Using the 5-10 percent figure, 416-833 eighth grade students may be eligible to begin the ninth grade program in the fall of 1985; 367-734 students may be eligible for the freshmen class of 1986.

These projections were derived from the following data provided by the Office of the County Superintendent: Using the official student count as of September 30, 1983, 7,562 students were enrolled in Grade 6 throughout the county and 8,588 students were enrolled in Grade 7. Reducing these figures by 3 percent to account for retentions and students who move out of the county, 7,335 students are currently enrolled in Grade 7 and 8,330 students are enrolled in Grade 8. (Official data based on the September 30, 1984 reporting will be available in January of 1985.)

Note: Student projections over the forthcoming 10 years will be prepared by a member of the Subcommittee of the Bergen County Superintendents' Association. A subcommittee has been convened to review the Bergen Tech proposal.

RELATED RESEARCH

Review of National Reports on Education

Over the last few years, seven national reports covering the state of American education have emerged. These reports all point to the need to improve American education. The studies link quality of education to success as a nation. A brief summary of each of these reports follows.

A Nation at Risk, sponsored by the National Commission on Excellence in Education, focuses on a rising tide of mediocrity which has caused American dominance in commerce, industry, science and technology to be challenged by competition around the world. Recommendations include the upgrading of minimum high school graduation requirements, setting more rigorous standards for schools and colleges, upgrading the teaching profession, and encouraging community leadership to spearhead reforms in schools.

Action for Excellence, prepared by the Task Force on Education for Economic Growth, posits that our ability to improve public education will determine our future success as a world leader and as a nation that effectively balances social stability, prosperity, national defense and individual well-being. The report urges schools to challenge gifted students, to intensify the academic experience, to strongly pursue quality controls in education, and to develop a higher community regard for teachers. The report encouraged more state and community aid to improve the resources of education, as well as state and local district plans to upgrade K-12 educational programs.

Academic Preparation for College, an Educational Equality Project sponsored by the College Entrance Examination Board, is a 10-year effort to improve the academic quality of high school education in order to expand opportunities for students at the postsecondary level. The essence of recommendations made by that Board is that schools must focus strongly on achievement and learning outcomes. The report lists the basic academic competencies and subject knowledge that are essential for student success in college work.

Making the Grade is a report prepared by the Task Force on Federal Elementary and Secondary Education Policy and sponsored by the Twentieth Century Fund. The report focuses on problems in public schools and recommends a federal commitment to the development of literacy in the English language for every student, continued federal support for handicapped and disadvantaged students, emphasis on advanced programs in science and mathematics for secondary students, renewed interest in foreign language instruction and development of programs to identify and reward excellent teachers.

High School: A Report on American Education was produced by the Carnegie Foundation for the Advancement of Teaching and is a comprehensive report on high school in the United States. Findings were derived from field studies, with recommendations for improvement based on a dozen themes, or dimensions, of secondary education. Some of the themes include: basic curriculum, English language skills, quality of instruction, school-to-work transition and public commitment to education.

Education and Economic Progress: Toward a National Education Policy, a Carnegie Corporation report, calls for a dramatic improvement in the quality of education to meet the needs of our technological society. The report links education to economic progress and emphasizes the need for more federal legislation to improve science and mathematics in the schools, to expand programs for gifted students and to develop a comprehensive approach to education that aims at three levels: public schools, colleges and adult retraining.

Sizer's Celebration of Teaching: High Schools in the 1980's was sponsored by the National Association of Secondary School Principals and the Commission on Educational Issues of the National Association of Independent Schools. The report emphasizes that Americans underrate schools and teachers and that schools are burdened by the complexities of bureaucracy. Sizer recommends strong incentives for teachers, responsibility for the design of education at the local level, award of diplomas only for the mastery of a defined body of knowledge, traditional subjects combined into a few integrated areas of learning, and the greatest emphasis on development of intellectual processes and the quality of student work.

While each of these reports varies in focus, the common elements of improved teaching, improved student performance, greater societal emphasis on education with scientific education as a priority and a focus on the educational needs of gifted students appear to be the general thrusts.

The American Educational System as Related to the Requirements of Science and Technology

Each of the recent studies of the state of American education point to declining levels of student performance. The following excerpts describe outcomes of the decline in the quality of American education and delineate educational objectives for a scientific and technological education.

The National Commission on Excellence in Education report, A Nation at Risk: The Imperative for Educational Reforms, outlines what are referred to as "indicators of risk." Some of these are:

> ...International comparisons of student achievement, completed a decade ago, reveal that on 19 academic tests American students were never first or second and, in comparison with other industrialized nations, were last seven times.
>
> ...Average achievement of high school students on most standardized tests is now lower than 26 years ago when Sputnik was launched.
>
> ...Over half the population of gifted students do not match their tested ability with comparable achievement in school.
>
> ...The College Board's Scholastic Aptitude Test (SAT) scores demonstrate a virtually unbroken decline from 1963 to 1980. Average verbal scores fell over 50 points and average mathematics scores dropped nearly 40 points.
>
> ...College Board achievement tests also reveal consistent declines in recent years in such subjects as physics and English.
>
> ...Both the number and proportion of students demonstrating superior achievement on the SATs (i.e., those with scores of 650 or higher) have also dramatically declined.
>
> ...Many 17 year-olds do not possess the "higher order" intellectual skills we should expect of them. Nearly 40 percent cannot draw inferences from written material; only one-fifth can write a persuasive essay; and only one-third can solve a mathematics problem requiring several steps.

Moving towards the reversal of these downward trends, Educating Americans for the 21st Century defines objectives for a science and technology education. These objectives include the development of broadbase academic knowledge in scientific and technological disciplines,

the ability to formulate questions and see answers from observation and interpretation of natural phenomena, an awareness of the nature and scope of careers in science and technology, and the development of intellectual skills such as critical thinking, problem solving, and innovative and creative thinking.

The rationale for meeting these objectives gains clarity when the objectives are considered in terms of the characteristics that are common to scientific and technical occupations. David L. Geotsch in his article "Meeting the High Tech Challenge" (School Shop, March, 1984) summarizes the characteristics of scientific and technical occupations. Characteristics of these occupations include:

> ...They require that workers have a broad knowledge base that includes mathematics, physics, chemistry, computer programming, electronics, electricity, fluid flow, and mechanics.
>
> ...They involve heavy and frequent computer use. Highly competitive technical industrial occupations are heavily automated, requiring workers with skills in both hard and software aspects of computers.
>
> ...They involve rapid and continuous change. Certain fields such as lasers, electro-optics and telecommunications might change by as much as 50 percent every three to four years.
>
> ...They are systems oriented. These technical occupations involve complex systems composed of electrical, electronic, mechanical, pneumatic, hydraulic, thermal and optical devices.

David E. Sanger, writing for the "Careers '85" supplement to the October 14, 1984 New York Times, notes that high technology represents a narrow sector of the economy that has far reaching effects in innumerable indirectly related fields. To meet the challenges of science and technology, the Bergen County School of Science and Technology aims to provide the best possible educational program for secondary students, to demand exceptional performance from its students and to develop in its students the capacity to function effectively in a changing world.

OPERATION OF THE SCHOOL

...Facilities
...Faculty
...Other Staff
...Financial Resources
...Transportation
...Public Relations/Recruitment of Students

FACILITIES

Educational facilities for students of the School of Science and Technology will be separate and distinct from those provided for vocational students. At a minimum, the following space allocations will be required:

...6-8 classrooms
...science laboratories (biology, physics, chemistry)
...electronics laboratory
...computer science laboratory
...CAD/CAM laboratory
...library
...office space for support staff (secretary, counselor(s), administrator)

Hackensack is proposed as the location of the new school. This central location and proximity to major roadways will provide an easy access for students from all areas of the county.

County bond money has already been committed to renovate facilities, purchase some equipment and erect the science laboratories. During the following month, a precise facilities determination must be made. The options are the following:

(1) convert a wing of the main campus in Hackensack;
(2) erect a new building;
(3) renovate existing Training Center facilities.

FACULTY

The issue of faculty is discussed below in terms of desired qualifications, the pool of people anticipated for these positions, and the question of appropriate state certification.

Instructor Qualifications

The selection and training of teachers for this program will be critical to its success. The following requirements will be essential:

(a) a high degree of subject matter competency
(b) the ability to work well with honors/gifted and talented students, and
(c) a commitment to continued retraining since new approaches and concepts will continue to develop in the areas of science and technology

Teachers will be required to put forth a communal teaching effort, since the teaching of high technology and science requires an integrated approach. A continuity between mathematics and science is essential.

That continuity must also carry through to applications in laboratory exercises and technology courses.

A Profile of the Faculty

It is expected that the faculty will be composed of full-time and half-time instructors and a group of specialists who will teach just one or two periods a day. In addition to the usual methods of recruiting teachers, arrangements with industry, local colleges and sending school districts will be sought to secure highly qualified people. Graduate assistants will be sought for roles as teacher aides and laboratory assistants.

Some Bergen Tech faculty members may qualify for positions in this new school. In addition, outstanding instructors from the sending district schools in Bergen County may be able to contribute instructional time to the new school. This effort of consolidation and efficient use of existing instructional resources within the county will be investigated by the Superintendent through the initiation of innovative, contractual arrangements with other districts.

Teacher Certification

The question of certification will have to be addressed at a state level in order to gain approval for the use of specialists as high school classroom teachers. While a certified teacher may be a specialist, it is more likely that this specialist will often be a college professor or an engineer from the private sector. These people will be qualified, but not necessarily certified. Utilization of such people is imperative to the creation of a faculty capable of handling the level of instruction required in a variety of the subjects proposed for the new school.

The question of certification takes on another meaning when linked to tenure rights. Many existing district instructors may not qualify for this program. Data Processing teachers, for example, probably do not have sufficient technical background to handle computer science instruction; electronics teachers may not have experience in the practical applications of programming and technology. Very specific job descriptions will have to be developed so that existing tenure rights in other subject areas do not preclude the hiring of a person who is technically qualified for this program.

The administrative staff is looking very carefully at new legislation regarding alternative teacher certification which may facilitate our aims in technical education without causing possible conflict with the existing staff. Above all, it is recognized that highly competent and qualified teachers who can motivate students will be critical to the success of this program.

OTHER STAFF

In addition to faculty, the school will operate with a principal, secretary, and guidance counselor(s)--all of who will work under the auspices of the Superintendent and the Board of Vocational Education.

FINANCIAL RESOURCES

Operational funding for the school will come from these sources:

(1) state aid,
(2) county appropriations, and
(3) tuition support from sending school districts.

Start-up funding will come from the Bergen County Freeholder Board who have approved a bond issue to renovate facilities in Hackensack, to install fully equipped physics, chemistry and biology laboratories, and to purchase equipment for the technology program. The total bond commitment for these projects is $3.2 million.

Additional start-up funding in the amount of $35,000 has been awarded under a competitive grant submitted as part of the RFP process, P.L. 94-482. These grant funds will support the planning effort this year. An additional grant, also an RFP, in the amount of $12,000 has been committed to the district for the development of curriculum for laser fiber optic technology which will be a part of electronics instruction in the new program.

Programmatic support will be available through federal/state grants, as well as private sources. Initiation of the new program will enable the district to apply for funding for gifted and talented students, for exemplary and mathematics and science programs, and for technical programs that develop curriculum around state-of-the art technology. As part of the statewide objective to improve scientific and technological education, the district plans to ask the state for special support funding which would cover operational costs for the first few years of operation. In addition the State Legislature is expected to endorse categorical aid in the amount of $217 per annum for each student classified as gifted and talented. This categorical aid would be an addition to the usual per pupil allocation.

It is also anticipated that the new school will attract private funding sources due to the nature of the educational programs that will be conducted. This funding could come in the form of technical support, equipment, or general programmatic subsidy.

One area that the administration has already begun to pursue is a second contract with IBM that would specifically target the new school. As you will recall, the district is still under contract with the IBM Corporation for the countywide training of teachers in the classroom use of the microcomputer. As part of the program, district staff was also responsible for the preparation of a general training manual, and workshop manuals for training English and mathematics instructors to use the computer in their classrooms. Upon completion of the project, the district will be

able to keep the personal computers, printers and software donated by IBM for this project. The new project under discussion is computerization of the new school. Included with this project would be a technical consultant (at no cost to the Board), computers, and computer projection equipment. The new school could become a model for the use of computers in the technical training process at the high school level.

TRANSPORTATION

The complexity of the transportation issue will be directly related to the number of locations from which students will have to be bussed. The proposal to work with approximately six school districts for the first year of operation will maximize the opportunity to implement satisfactory transportation arrangements for students.

Issues to be addressed are the following: Will this school district or sending districts provide transportation for shared-time studens in the School of Science and Technology? Students in the new school will have to begin their classes at 7:45 A.M., which is an earlier starting time than that observed for other district approved programs. Therefore, a bussing system that is separate from that used for all other district-sponsored programs will have to be implemented unless starting times are changed for other school programs. Another issue is that of transportation for students who take individual courses. Transportation for these students will have to be provided by the sending district.

A lengthy study has been done by staff, including a discussion of all of the variables, transportation routes, and costs to the district. This study can be examined and revised when a decision is made concerning the number of districts (if, in fact, a limit is set) who will participate in the first year of the project.

PUBLIC RELATIONS/RECRUITMENT OF STUDENTS

Critical to the operation of the school will be a public relations program that properly identifies the School of Science and Technology. The cultivation of a public image that conveys the character and nature of the program is essential to the recruitment of qualified students.

Preliminary efforts put forth by the district to secure input from surrounding schools and superintendents are hoped to contribute to the implementation of a program that is met with enthusiasm by the Bergen County community.

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
a school development project proposed by the
Bergen County Vocational-Technical Schools

Analysis of Projected Costs

After the first five years of operation, the projected annual operating cost of the new school can come from changes within the present district operating budget, from local tuition, and from grants/business-industry support which the district anticipates receiving. Since this is an additional service provided to Bergen County residents, however, the County Freeholders can anticipate a request from the Board of Vocational Education to assume responsibility for some of the operating costs.

PROJECTED OPERATING COST:

The estimates presented in Table I (attached) represent year-to-year costs to equip and operate the Bergen County School of Science and Technology for the first five years. The data is based on the projection of 45 full-time students in the pilot year of the program and a total enrollment of 315 full-time students in the fifth year.

NUMBER OF LABORATORIES AND CLASSROOMS REQUESTED:

Table II summarizes the laboratory and classroom requirements based on the projected student enrollments. In the first year of operation, three laboratories and two classrooms will be needed.

ESTIMATED COST OF FACILITIES OPERATION AND MAINTENANCE:

The data displayed in Table III are based on standard costs as a function of the square feet utilized in the program for a given year.

Attachments: Tables I, II, III

BEST COPY

COST PROJECTION FOR EACH YEAR

TABLE II

*NUMBER OF LABORATORIES REQUIRED

	FIRST YEAR	SECOND YEAR	THIRD YEAR	FOURTH YEAR
Physics	1	2	3	3
Chemistry	0	1	2	2
Electronics	1	2	3	4
Computer	1	2	3	4
Computer Center	0	1/2	1	1
Biology	0	1	2	2
Machine Shop	0	1/2	1	1
Drafting	0	1/2	1	1
Robotics & Hydraulics	0	0	1	1
	3	9 1/2	17	19

* Cumulative; the total number of laboratories required during the fourth year is (19) and the total number of classrooms required in the same year is (11).

TABLE III

ESTIMATED COST OF FACILITIES OPERATION AND MAINTENANCE

CLASSROOMS AND LABORATORIES	SQUARE FEET	COST IN DOLLARS
First Year	5,100	27,500
Second Year	16,950	100,200
Third Year	24,000	156,000
Fourth Year	29,850	293,500
		$577,200

BEST COPY AVAILABLE

STUDENTS

...Admission and Selection of Students

...Exit Requirements

...Student Personnel Services

ADMISSION AND SELECTION OF STUDENTS

Objective

It will be an objective of the school to admit the most highly qualified students for a science and technology education and then to secure their educational needs by providing a challenging and stimulating curriculum.

Non-Discrimination Policy for Students

The Bergen County Board of Vocational Education does not discriminate in admissions, access to education and training, or other student support services. The school practices equal access and equal opportunity to students regardless of race, religion, sex, age or national origin.

Application Procedure

(for full-time and shared-time students)

(1) Interested students and their parents will be encouraged to visit the school and talk with school officials.

(2) Each prospective student will be asked to complete a formal application.

(3) The application, as well as interests and educational goals, will be discussed with each student during a personal interview. A list of standard questions/topics to be discussed will be provided to each interviewer. A record of the interview will be maintained on a prepared form.

(4) All prospective students will be required to take the entrance examination set forth by the school.

(5) Prospective students will be required to submit previous school and health records.

(6) Prospective students will be required to submit (3) recommendations from teachers, guidance counselors or other individuals familiar with the student's academic potential and performance.

Criteria for Selection of Students

(full-time and part-time programs)

The criteria for selection of students will include:

(1) review of formal application

(2) results of entrance examination

(3) review of past performance in school

(4) review of recommendations

(5) review of student interview.

The admissions committee will consider all of the criteria stated above and will select students deemed to have the greatest potential for success in the program. It is anticipated that the students will be among the top 5-10% of the eighth grade on a countrywide basis.

Admissions Committee

The admissions committee will consist at a minimum of school principal, counselor(s) and two teachers who are thoroughly familiar with school programs and their requirements.

Admission to Individual Courses

Students who wish to attend the school for individual courses will not be required to follow the established applications procedure. These students will need only to show proof of completion of any prerequisite requirements for the course they wish to take.

Entrance Examination

Three national institutions have been contacted to examine and secure satisfactory entrance examinations. These organizations are the following: Scholastic Testing Service, American Guidance Service and The Psychology Corporation.

Current projections are that the exam will be in place within six weeks. Testing is projected to begin in early 1985.

The entrance examination will be based on nationally normed, standardized tests to determine student ability levels in:

A. English

1. Language

a. spelling

b. grammar

2. Reading

a. vocabulary

b. comprehension

3. Writing

B. Mathematics

1. Concepts

2. Problem solving

C. Technical aptitude

1. Electrical and mechanical aptitudes

2. Programming aptitude

Tests results for qualified students should reveal that these students have completed or have the potential to complete ninth grade level work at the end of their eighth grade year. Specific test score requirements for entrance to the program will be established after selection of the testing instrument(s).

EXIT REQUIREMENTS

In addition to meeting standard graduation requirements set forth by the state and local districts, students are expected:

(a) to satisfactorily complete the program set forth by the selected study major *(with consideration given to students who change their study majors);

(b) to take achievement and advanced placement examinations *in selected areas of study.

* Note: See "Curriculum" section of this proposal for a description of study majors, for program outlines, and for a listing of the required achievement and advanced placement examinations.

STUDENT PERSONNEL SERVICES

Guidance and Counseling Services

The following guidance and counseling services will be available to students:

(1) personal and educational counseling

(2) counseling for college entrance examinations, achievement and advanced placement examinations

(3) counseling for scholarship programs and National competitions

(4) career counseling

(5) college admissions counseling

In addition to the above services which will be provided by the counseling staff of the School of Science and Technology, the district has under contract a child study team who work with individual students on a districtwide basis. The services of the child study team will be available to students in the School of Science and Technology.

College Planning

The scholastic program proposed for the School of Science and Technology offers excellent preparation for college. The student personnel services staff will work directly with students to help them prepare for and select colleges. Staff will also maintain a College Folder for each student which includes letters of recommendation, records of academic and extra curricular performance, records of community service, awards, and honors. A written summary will be prepared for each student to use with applications to college.

Career Information

Career information will be disseminated to students by both the Student Personal Services staff and by subject area teachers. Instructors will be expected to take on this responsibility.

CURRICULUM

...Background
...National Examinations
...National Contests and Activities
...Curriculum Patterns for Students
...Notes on Curriculum

...Curriculum Summary
...Program Outlines
...Course Descriptions
- Physics
- Mathematics
- Chemistry and Biology
- Computer Science
- Electronic Technology
- Mechanical Technology

BACKGROUND

In developing a comprehensive academic and technical curriculum, one of the key elements evaluated was what constitutes high technology. High technology is defined here as the application of computer systems and technology to the solution of scientific and engineering problems. In terms of this concept, high technology industry is identified by:

(a) heavy and frequent use of computers;
(b) heavy use of systems whose analysis and operation are understood in terms of electrical, electronics, mechanical, pneumatic, hydraulic, thermal and optical devices; and
(c) the requirement of technical personnel with a broad and in depth understanding of the underlying principles of mathematics, science and technology.

Thus, it is obvious that a high technology education curriculum must be sufficiently broadbased to include computer science and electronics, in addition to mathematics and physics. Having recognized the need for a comprehensive education in these four areas, curriculum development emphasizes the concepts of mathematics, physics and computer science with applications in electronics technology. These subject areas form the core of the educational program for all students.

NATIONAL EXAMINATIONS

During their high school careers, all students will be expected to take the following nationally normed examinations:

Achievement:	Mathematics (Level I Exam)
	Mathematics (Level II Exam)
	Physics
	Chemistry
Advanced Placement:	Computer Science
	Physics
	Mathematics (Level AB Exam)

PSAT/NMSQT/SAT .

In addition, students will be encouraged to take the Level BC Examination for Advanced Placement in Mathematics, the Advanced Placement Examination in Biology and other achievement or advanced placement examinations in the humanities areas (e.g. English Literature, English Language, Foreign Language, Art, Music).

NATIONAL CONTESTS AND ACTIVITIES

Students will be encouraged to participate in national scholastic competitions. A list of these follows.

National Merit Scholarship Program
Junior Science and Humanities Symposium
Computer Programming Contest
Science Award and Scholarship Program
Future Problem Solving Program
U. S. Senate Youth Program
National Engineering Aptitude Search
Annual High School Mathematics Exam
NASA Student Involvement Project
Mathcounts
Current Events Quiz
Int. Science and Engineering Fair
Westinghouse Science Scholarship
Olympics of the Mind

CURRICULUM PATTERNS FOR STUDENTS

Core Program

The curriculum for ninth and tenth grade students exposes students to the elements of high technology and prepares students for the advanced level courses and study in an area of major specialization. In addition to exposing students to the elements of high technology, the core program gives students an opportunity to experience areas of study before they are required to choose an area of concentration.

During the ninth grade, all students take mathematics, physics, electrical fundamentals and computer sciences.

By the tenth grade year, students will elect either an educational program that emphasizes the sciences or an educational program that emphasizes technology. Both science and technology students will take mathematics, physics, electronic fundamentals, computer science and one semester of chemistry. Science students, however, will take biology and a second semester of chemistry while technology students will take two semesters of mechanical technology.

Major Areas of Specialization

In the eleventh grade, students will select a study major. Students will continue to follow the curriculum set forth by the selected major through the end of the twelfth grade year.

The study majors are classified under "Science Option" and "Technology Option". Science students select either Mathematics and Physics or Chemistry and Biology. In the future a third science major, Bio-Technology, is planned. Technology students select one of the three following majors: Computer Science, Electronic Technology or Mechanical Technology.

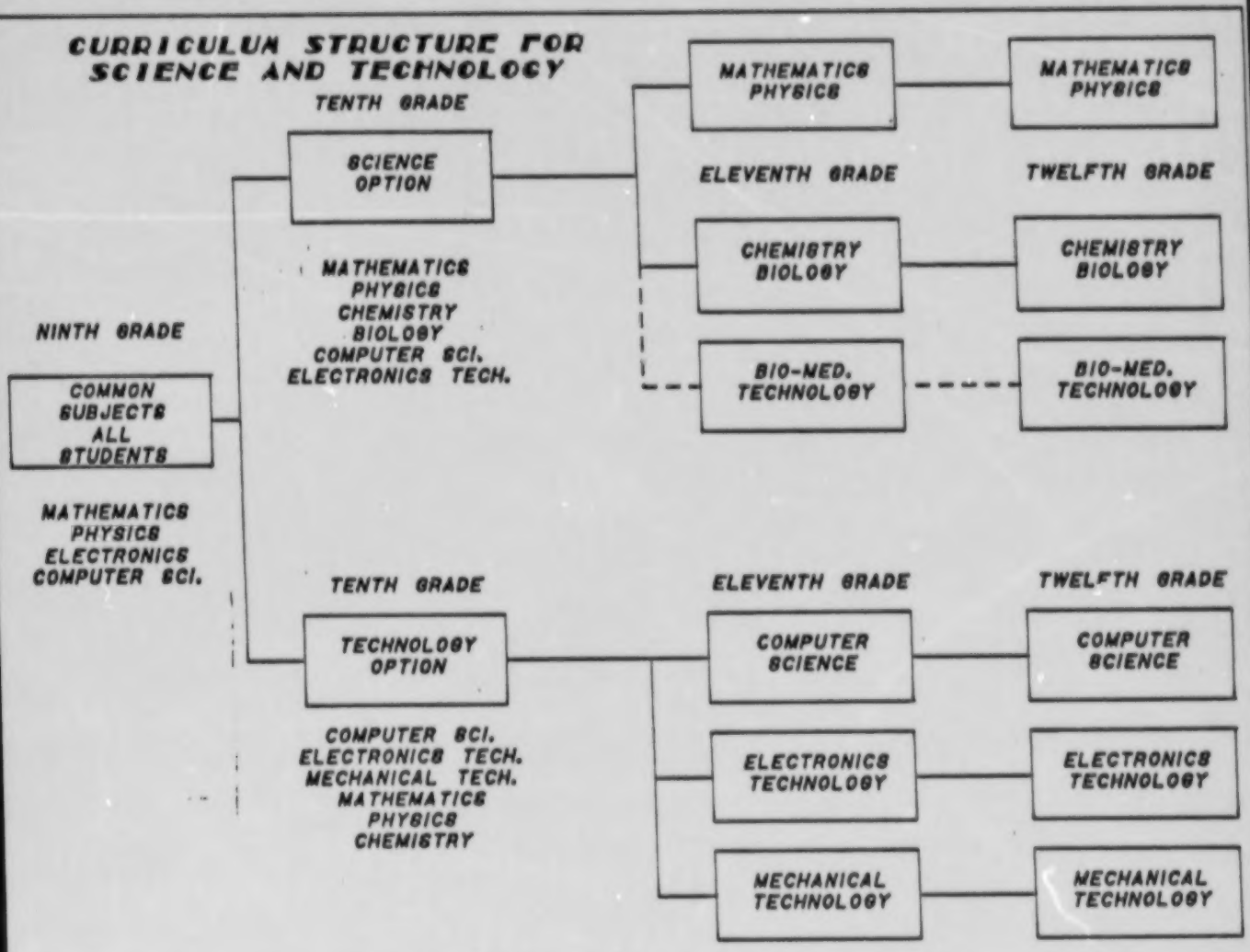
A Curriculum Summary (Figure 3) and program outlines (figures 4-8) covering grades 9-12 for each of the five areas of major specialization are included with this proposal. Following the program outlines are course descriptions which have been categorized under each study major.

NOTES ON CURRICULUM

(1) Although prerequisite requirements have been listed for most courses, no co-requisite course requirements are shown. It is understood, however, that the mathematics courses shown on the program outlines are obligatory for all students.

(2) While curriculum is delineated from grades 9 through 12 for all mathematics, science and technology courses, project staff expect that some changes will be made in grades 11 and 12. Staff members are in the process of seeking additional input from field professionals and other educators in order to validate the curriculum.

(3) No development work to date has been undertaken for special elective courses or for the humanities subjects that would be included in a full-time program. This work will take place as the need arises.


CURRICULUM STRUCTURE FOR SCIENCE AND TECHNOLOGY
NINTH GRADE
COMMON SUBJECTS ALL STUDENTS
MATHEMATICS PHYSICS ELECTRONICS COMPUTER SCI.
TENTH GRADE
SCIENCE OPTION
MATHEMATICS PHYSICS CHEMISTRY BIOLOGY COMPUTER SCI. ELECTRONICS TECH.
ELEVENTH GRADE
MATHEMATICS PHYSICS
CHEMISTRY BIOLOGY
BIO-MED. TECHNOLOGY
TWELFTH GRADE
MATHEMATICS PHYSICS
CHEMISTRY BIOLOGY
BIO-MED. TECHNOLOGY
TENTH GRADE
TECHNOLOGY OPTION
COMPUTER SCI. ELECTRONICS TECH. MECHANICAL TECH. MATHEMATICS PHYSICS CHEMISTRY
ELEVENTH GRADE
COMPUTER SCIENCE
ELECTRONICS TECHNOLOGY
MECHANICAL TECHNOLOGY
TWELFTH GRADE
COMPUTER SCIENCE
ELECTRONICS TECHNOLOGY
MECHANICAL TECHNOLOGY

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
HACKENSACK, NEW JERSEY 07601

CURRICULUM SUMMARY

SCIENCE STUDENTS

4 yrs. Mathematics
2 yrs. Physics
1 yr. Chemistry
1 yr. Biology
2½ yrs. Electronics
2½ yrs. Computer Science
2 yrs. Advanced Chemistry/Mathematics
2 yrs. Advanced Biology/Physics
3 yrs. Electives

TECHNOLOGY STUDENTS

4 yrs. Mathematics
2 yrs. Physics
1 yr. Chemistry
1 yr. Mechanical Technology
2½ yrs. Electronics
2½ yrs. Computer Science
4 yrs. Major Concentration
3 yrs. Electives

AREAS OF MAJOR CONCENTRATION

TECHNOLOGY OPTION
- Computer Science
- Electronic Technology
- Mechanical Technology

SCIENCE OPTION
- Chemistry-Biology
- Mathematics-Physics
- Bio-Technology (future development)

PROPOSED ELECTIVES

Art, Music, English Literature
Advanced Science
Advanced Technical
Technical Writing
Social and Ethical Responsibility of Scientists

Figure 3
Curriculum Summary

BERGEN COUNTY SCHOOL OF [illegible]ENCE AND TECHNOLOGY
HACKENSACK, NEW [illegible]EY 07601

MAJOR: MATHEMATICS AND PHYSICS

GRADE	SEMESTER I	PERIODS PER DAY	SEMESTER II	PERIODS PER DAY
9th	Math I	1.0	Math II	1.0
	Physics I	1.0	Physics II	1.0
	Electrical Fund. I (ET)	1.5	Electrical Fund. II (ET)	1.5
	PASCAL (CS)	1.5	Assembler Programming I (CS)	1.5
10th	Math III	1.0	Math IV	1.0
	Physics III	1.0	Chemistry II	1.0
	Chemistry I	1.0	Gen. Biology I	1.0
	Electronic Fund. I (ET)	1.0	Electronic Fund. II (ET)	1.0
	Comp. Organization (CS)	1.0	Data Structures & Algorithms	1.0
11th	A.P. Calculus I	1.0	A.P. Calculus II	1.0
	Gen. Biology II	1.0	A.P. Physics	1.0
	Axiomatic Structures (Math)	1.0	Intro. to Probability (Math)	1.0
	Astronomy (Physics)	1.0	Waves & Optics (Phys.)	1.0
	Elective	1.0	Elective	1.0
12th	A.P. Differential Equations	1.0	A.P. Advanced Calculus	1.0
	Matrix Algebra (Math)	1.0	Ind. Study/Research (Math)	1.0
	Intro. to Modern Physics (Phys.)	1.0	Ind. Study/Research (Phys.)	1.0
	Electives	2.0	Electives	2.0

ET: Electrical Technology
CS: Computer Science

Figure 4: Program Outline
Mathematics and Physics

BERGEN COUNTY SCHOOL OF S[illegible]NCE AND TECHNOLOGY
HACKENSACK, NEW JERSEY 07601

MAJOR: CHEMISTRY AND BIOLOGY

GRADE	SEMESTER I	PERIODS PER DAY	SEMESTER II	PERIODS PER DAY
9th	Math I	1.0	Math II	1.0
	Physics I	1.0	Physics II	1.0
	Electrical Fund. I (ET)	1.5	Electrical Fund. II (ET)	1.5
	PASCAL (CS)	1.5	Assembler Programming I (CS)	1.5
10th	Math III	1.0	Math IV	1.0
	Physics III	1.0	Chemistry II	1.0
	Chemistry I	1.0	Gen. Biology I	1.0
	Electronic Fund. I (ET)	1.0	Electronic Fund. II (ET)	1.0
	Comp. Organization (CS)	1.0	Data Structures & Algorithms	1.0
11th	A.P. Calculus I	1.0	A.P. Calculus II	1.0
	Gen. Biology II	1.0	A.P. Physics	1.0
	A.P. Gen. Chemistry I	1.0	A.P. Gen. Chemistry II	1.0
	A.P. Biology I	1.0	A.P. Biology II	1.0
	Elective	1.0	Elective	1.0
12th	A.P. Differential Equations	1.0	A.P. Advanced Calculus	1.0
	Organic Chemistry I	1.0	Organic Chemistry II	1.0
	Genetics I	1.0	Genetics II	1.0
	Electives	2.0	Electives	2.0

ET: Electrical Technology
CS: Computer Science

Figure 5: Program Outline
Chemistry and Biology

BERGEN COUNTY SCHOOL OF [illegible]ENCE AND TECHNOLOGY
HACKENSACK, NEW JERSEY 07601

MAJOR: COMPUTER SCIENCE

GRADE	SEMESTER I	PERIODS PER DAY	SEMESTER II	PERIODS PER DAY
9th	Math I	1.0	Math II	1.0
	Physics I	1.0	Physics II	1.0
	Electrical Fund. I (ET)	1.5	Electrical Fund. II (ET)	1.5
	PASCAL (CS)	1.5	Assembler Programming I (CS)	1.5
10th	Math III	1.0	Math IV	1.0
	Physics III	1.0	Chemistry I	1.0
	Drafting Tech. (MT)	1.0	Machine Shop Tech. (MT)	1.0
	Electronic Fund. I (ET)	1.0	Electronic Fund. II (ET)	1.0
	Comp. Organization (CS)	1.0	Data Structures & Algorithms (CS)	1.0
11th	A.P. Calculus I	1.0	A.P. Calculus II	1.0
	Chemistry II	1.0	A.P. Physics	1.0
	Assembler Language II (CS)	1.0	Computer Networks (CS)	1.0
	'C' Programming (CS)	1.0	Computer Graphics (CS)	1.0
	Elective	1.0	Elective	1.0
12th	A.P. Differential Equations	1.0	A.P. Advanced Calculus	1.0
	Database Systems (CS)	1.0	Operating Systems (CS)	1.0
	Computer Algorithms (CS)	1.0	Software Engineering (CS)	1.0
	Electives	2.0	Electives	2.0

ET: Electrical Technology
MT: Mechanical Technology
CS: Computer Science

Figure 6: Program Outline
Computer Science

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
HACKENSACK, NEW JERSEY 07601

MAJOR: ELECTRONIC TECHNOLOGY

GRADE	SEMESTER I	PERIODS PER DAY	SEMESTER II	PERIODS PER DAY
9th	Math I	1.0	Math II	1.0
	Physics I	1.0	Physics II	1.0
	Electrical Fund. I (ET)	1.5	Electrical Fund. II (ET)	1.5
	PASCAL (CS)	1.5	Assembler Programming I (CS)	1.5
10th	Math III	1.0	Math IV	1.0
	Physics III	1.0	Chemistry I	1.0
	Drafting Tech.(MT)	1.0	Machine Shop Tech. (MT)	1.0
	Electronic Fund. I (ET)	1.0	Electronic Fund. II (ET)	1.0
	Comp. Organization (CS)	1.0	Data Structures & Algorithms (CS)	1.0
11th	A.P. Calculus I	1.0	A.P. Calculus II	1.0
	Chemistry II	1.0	A.P. Physics	1.0
	Electronic Fund. III (ET)	1.0	Digital Logic II	1.0
	Digital Logic I	1.0	Electric Power	1.0
	Elective	1.0	Elective	1.0
12th	A.P. Differential Equations	1.0	A.P. Advanced Calculus	1.0
	Microprocessor and Memory Circuits	1.0	Microprocessor Hardware and Systems	1.0
	Passive Networks I	1.0	Auto. Control Systems	1.0
	Digital Logic III	1.0	Passive Networks II	1.0
	Elective	1.0	Elective	1.0

ET: Electrical Technology
CS: Computer Science
MT: Mechanical Technology

Figure 7: Program Outline
Electronic Technology

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
HACKENSACK, NEW JERSEY 07601

MAJOR: MECHANICAL TECHNOLOGY

GRADE	SEMESTER I	PERIODS PER DAY	SEMESTER II	PERIODS PER DAY
9th	Math I	1.0	Math II	1.0
	Physics I	1.0	Physics II	1.0
	Electrical Fund. I (ET)	1.5	Electrical Fund. II (ET)	1.5
	PASCAL (CS)	1.5	Assembler Programming I (CS)	1.5
10th	Math III	1.0	Math IV	1.0
	Physics III	1.0	Chemistry I	1.0
	Drafting Tech. (MT)	1.0	Machine Shop Tech. (MT)	1.0
	Electronic Fund. I (ET)	1.0	Electronic Fund. II (ET)	1.0
	Comp. Organization (CS)	1.0	Data Structures & Algorithms (CS)	1.0
11th	A.P. Calculus I	1.0	A.P. Calculus II	1.0
	Chemistry II	1.0	A.P. Physics	1.0
	CAD Tech I (MT)	1.0	CAM Tech I (MT)	1.0
	Strength of Materials I (MT)	1.0	Strength of Materials II (MT)	1.0
	Elective	1.0	Elective	1.0
12th	A.P. Differential Equations	1.0	A.P. Advanced Calculus	1.0
	Fluid Mechanics I (MT)	1.0	Fluid Mechanics II (MT)	1.0
	CAD/CAM Technology (MT)	1.0	Intro. to Robotics (MT)	1.0
	Electives	2.0	Electives	2.0

ET: Electrical Technology
MT: Mechanical Technology
CS: Computer Science

Figure 8: Program Outline
Mechanical Technology

Course Descriptions

PHYSICS

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
Hackensack, New Jersey 07601

Program Area: PHYSICS

Course Descriptions

Physics I

This is the first of a three-semester course in high school physics that prepares students for the Achievement Examination in Physics. Topics included in this lecture/laboratory course are kinematics, dynamics, energy, momentum, gravity, and vibrations.

(1.0 semesters)
Prerequisites: None

Physics II

This lecture/laboratory course covers heat, kinetic theory, thermodynamics, electricity and magnetism. The second of a three-semester course in high school physics, this class helps to prepare students for the Achievement Examination in Physics.

(1.0 semesters)
Prerequisite: Physics I

Physics III

This final course in high school physics includes waves, physical optics, geometric optics, atomic physics, nuclear physics, photons, photoelectric effect and relativity. Upon completion of this lecture/laboratory course, students will be prepared to sit for the Achievement Examination in Physics.

(1.0 semesters)
Prerequisite: Physics II

Advanced Placement (A.P.) Physics

This is an advanced course in mechanics, electricity and magnetism using calculus for derivation and problem solving. At the end of this lecture/laboratory course, students are expected to take the Advanced Placement (Level-C) Examination in Physics.

(1.0 semesters)
Prerequisites: Physics III

Astronomy

This course is a quantitative introduction to the astronomy of the solar system, the stars, the milky way galaxy, and other galaxies. Emphasis in the course is placed on the physical principles which are the basis of the study of astrophysics. Topics of instruction include orbital motion, telescopes, stellar astronomy, celestial coordinates, characteristics of the solar system, evolution of the solar system, types of stars and galaxies, and the universe.

(1.0 semesters)
Prerequisites: Math IV, Physics III

Waves and Optics

This course focuses on harmonic motion, oscillations and waves in elastic media, geometric and physical optics. Also included in the instruction are the following topics: the Doppler effect, Maxwell displacement current, Young's experiment, the Michelson interferometer, X-ray diffraction, the principles of holography, and Laser coherence. Theory will be followed by student experimentation in the lab.

(1.0 semesters)
Prerequisites: Calculus I

Introduction to Modern Physics

This introduction to modern physics covers the following topics: special and general relativity; introduction to quantum mechanics; the hydrogen atom, atomic and molecular structure; nuclear physics, elementary particle physics, solid-state physics, chemical physics and biological physics. Topics in instruction will be covered in terms of their applications to current technology and scientific research which the student will experience in a laboratory setting.

(1.0 semesters)
Prerequisites: Calculus I, II; A.P. Physics

Independent Study/Research in Physics

Students who participate in this final course in physics will study a topic of personal interest which covers new developments in the field. Requiring faculty approval, the student-selected topic will be based on theory and/or on laboratory experimentation. At the end of the term, each student will be required to present the results of the semester's work to both faculty and students in the Physics Department.

(1.0 semesters)
Prerequisites: Physics Department faculty approval

Course Descriptions

MATHEMATICS

Program Area: MATHEMATICS

Course Descriptions

Mathematics I

This first course in high school mathematics includes selected topics in plane geometry and a review of Algebra I. Topics in geometry include angles, lines, triangles, polygons, circles, perimeter and area, and volumes. The coverage in algebra includes signed numbers, properties of operation, polynomials, equations with one variable, products and factoring, algebraic fractions, radicals, irrational numbers and solution of quadratic equations.

(1.0 semesters)
Prerequisite: An Introduction to Algebra

Mathematics II

This course in mathematics covers coordinate (straight line) geometry; basic trigonometry, trigonometric functions and their graphs; mathematical reasoning, logic; sets; and elementary number theory. This is the second of four courses in high school mathematics that prepare the student for Achievement Level I and Level II Examinations in Mathematics.

(1.0 semesters)
Prerequisite: Mathematics I

Mathematics III

Topics in Algebra II, coordinate geometry and solid geometry form the core of material covered in this course. Algebra II topics include systems of equations with two variables, graphing, complex numbers, and solution of simple cubic equations. Coordinate geometry covers conic sections and includes circle, parabola, ellipse and hyperbola. Solid geometry is presented in an introductory format. This is the third of a four-semester program in high school level mathematics that prepares students for Achievement Level I and Level II Examinations in Mathematics. Upon completion of Mathematics III, students will be prepared to sit for the Level I examination.

(1.0 semesters)
Prerequisite: Mathematics II

Mathematics IV

This final course in high school level mathematics covers trigonometry (trigonometric functions of the general angle, graphing of trigonometric functions, identities and equations, and generalized trigonometric relationships); introduction to elementary functions; sequences and limits; logic and proof; and probability and statistics. Upon completion of this course, students will be prepared to sit for the Achievement Level II Examination in Mathematics.

(1.0 semesters)
Prerequisite: Mathematics III

A. P. Calculus I

This is the first of a two-semester course in calculus that prepares students for the Advanced Placement Level-AB, Examination in Mathematics. Course topics include elementary functions (properties of functions, limits) and differential calculus (the derivative, applications of the derivative).

(1.0 semesters)
Prerequisite: Mathematics IV

A. P. Calculus II

This course focuses on integral calculus and covers the following topics: antiderivatives, application of antiderivatives, techniques of integration, the definite integral, and applications of the definite integral. Upon completion of this course, students will be prepared to sit for the Advanced Placement, Level-AB, Examination in Mathematics.

(1.0 semesters)
Prerequisite: A.P. Calculus I

A. P. Elementary Differential Equations

Covered in this course are first order equations with variables, first order linear equations, second order linear equations with constant coefficients, and applications with initial conditions. This course begins to prepare students for the Advanced Placement, Level-BC, Examination in Mathematics.

(1.0 semesters)
Prerequisite: A.P. Calculus II

A. P. Advanced Calculus

Considered in this course are the following: advanced topics in differential calculus, advanced topics in integral calculus, sequences and their convergence, series of real numbers, and series of functions. Upon completion of this course, students will be prepared to take the Advanced Placement, Level-BC, Examination in Mathematics.

(1.0 semesters)
Prerequisite: A.P. Calculus II

Introduction to Axiomatic Structures

Providing needed backgound for advanced studies in mathematics and computer science, this course includes the following: propositional logic, set theory, proof by induction, functions and relations, and countable and uncountable sets. This course is a requirement for mathematics majors and an elective for computer science majors.

(1.0 semesters)
Prerequisite: Mathematics III

Introduction to Probability

This is an introductory course that deals with the mathematical foundations and techniques of random phenomena that occur in science and engineering. Topics of study include discrete and continuous functions, curve equation relationship, set theory, random events, probability functions, mathematical expectation, conditional probability and special distributions.

(1.0 semesters)
Prerequisite: A.P. Calculus I

Matrix Algebra with Computers

This course provides the mathematical background needed for the study of systems of linear equations and the analysis of efficient algorithms to solve related problems using computers.

(1.0 semesters)
Prerequisite: A.P. Calculus II

Independent Study Research in Mathematics

Students who participate in this final course in mathematics will study a topic of personal interest which concerns new developments in the field. Requiring faculty approval, the student-selected topic will be based on mathematical theory. At the end of the term, each student will be required to present the results of the semester's work to both faculty and students in the Mathematics Department.

(1.0 semesters)
Prerequisite: Mathematics Department faculty approval

Course Descriptions

CHEMISTRY and BIOLOGY

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
Hackensack, New Jersey 07601

Program Area: CHEMISTRY AND BIOLOGY

Course Descriptions

Chemistry I and II

This course covers the basic theories, laws and principles of chemistry. Laboratory experiments provide practical applications of the theory and the development of techniques commonly used for measurement, analysis, logical thinking and problem solving. Upon completion of the second semester, students will be prepared to take the Achievement Level Examination in Chemistry. Topics included in this course are the following: matter and energy; atomic structure; bonding; chemical formulas; gases; stoichiometry; changes in states of matter; chemical reaction and rates of reactions; chemical equilibriums; acids, bases and salts; oxidation-reduction and electrochemistry; introduction to carbon and organic chemistry; nucleonics.

(2.0 semesters)
Prerequisite: Mathematics II

A. P. General Chemistry I and II

This advanced placement course in chemistry is designed for science majors. Major units of study in this lecture/laboratory course are matter, energy, subshells and electron configuration, types of bonding, and the properties of liquids, solids and gases.

(2.0 semesters)
Prerequisite: Chemistry II

Organic Chemistry I and II

This lecture/laboratory course covers the structure and chemical properties of carbon compounds, with emphasis on the basic mechanisms of reaction and the principles of synthesis.

(2.0 semesters)
Prerequisite: A.P. General Chemistry II

General Biology I and II

This course is designed to provide a broad understanding of the fundamental principles of biology. Included are the following topics of study: principal groups of plants and animals; reproduction and development, evolution and diversity; basic genetics; and natural environments. In addition, approximately 30 percent of the class time will be directed toward the study of special topics in biology. Students will select three of the following specializations: biochemistry, human physiology, reproduction and development, modern genetics, modern evolution theory, and ecology. Upon completion of the second semester, students will be prepared to take the Advanced Placement Level Examination in Biology.

(1.0 semesters)

Prerequisites: None

A. P. Biology I, II

This advanced placement course in biology is designed for science majors. Major topics of study in this lecture/laboratory class include enzymes and living systems, organization of cells, organisms and the diversity of life, biology of plants, animals and populations, and organisms in nature.

(2.0 semesters)

Prerequisite: General Biology II

Genetics I and II

This lecture/laboratory course focuses on the study of heredity and the transmission of genes. Analysis is made of structure, function and change, and expression in development of the individual organism. Study topics include identification and properties of genetic material; replications; transcription, and translations of nucleic acids; variation of nucleic acids; genetic recombination, interaction, and regulation; evolution.

(2.0 semesters)
Prerequisite: A.P. Biology II

Course Descriptions

COMPUTER SCIENCE

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
Hackensack, New Jersey 07601

Program Area: COMPUTER SCIENCE

Course Descriptions

Programming in PASCAL

This is an introductory higher level programming language course that focuses on the concepts of structural and modular programming. Programs are written, tested and debugged on the IBM PC. Topics included in this course are the following: structured programming concepts; data, operators, expressions and assignments; decision and repetition; procedures and functions; variable and structured types; dynamic data structures, sequential files and program design.

(1.5 semesters)
Prerequisite: None

Assembler Language Programming I

This course provides the student with a basic understanding of the 8088 microprocessor architecture from a programmer's viewpoint. Topics of study include: number systems (binary, decimal, hex); 8088 instruction set and format; assembler instructions; carry/negative/zero/overflow flags; arithmetic and logic operations; addressing; branching and looping; debugging.

(1.5 semesters)
Prerequisite: Programming in PASCAL

Introduction to Computer Organization and Interfacing

This course provides an understanding of the IBM PC architecture, memory organization and interfacing of peripheral devices. In addition, the course covers the following topics: disk operating system, I/O control techniques, serial data communication, converters, and data communication protocol.

(1.0 semesters)
Prerequisite: Assembler Language Programming I

Assembler Language Programming II

This is an advanced course in Assembler and Machine Language programming using the 68000 microprocessor. The course begins with an overview of 68000 architecture, addressing modes and the instruction set. The concepts of exception processing, multitasking and multiprogramming are also presented in this course.

(1.0 semesters)
Prerequisites: Assembler Language Programming I, Introduction to Computer Organization and Interfacing

Data Structures and Algorithms

This course introduces the basic concepts of data structures, file structures and algorithms. Various sorting and searching algorithms will be analyzed and programmed in the PASCAL language.

(1.0 semesters)
Prerequisite: Programming in PASCAL

"C" Language Programming

In this high-level programming language course, students study the following: primary data types, operations and expression, control flow, functions and program structure, pointers and arrays, input and output. Programming applications enable students to write system programs in "C."

(1.0 semesters)
Prerequisite: Data Structures and Algorithms

Computer Communications and Networks

This course reviews the terminology, media, equipment and protocols used in data communications. Local Area Networks (LAN) and their implementation are also discussed.

(1.0 semesters)
Prerequisite: Assembler Language Programming II

Introduction to Computer Graphics

This course introduces the concept of computer graphics and develops in students a basic proficiency in the use and applications of interactive graphics hardware and software.

(1.0 semesters)
Prerequisites: "C" Language Programming; Programming in PASCAL

Introduction to Database Systems

This course presents an overview of the organization, access, retrieval and maintenance of data as an information system. Specific topics of study include sources of data, data storage and accessing techniques, data file environment, database administration, data dictionary, and analysis of database systems and software packages.

(1.0 semesters)
Prerequisite: Data Structures and Algorithms

Computer Algorithms

This advanced course covers the design and analysis of efficient algorithms. Topics include graphs and trees, recursion, divide and conquer, balancing, hashing, binary search, B-trees, symbol tables, and memory management.

(1.0 semesters)
Prerequisite: Data Structures and Algorithms

Software Engineering

This advanced course deals with standardized program development and tools for software development. Course topics include standards and guidelines; readability, consistency and portability; development of software tools; use of software tools for systems programming; and managing software development. The course includes an individualized software development project for each student.

(1.0 semesters)
Prerequisite: "C" Language Programming

Operating Systems

This introductory course provides a basic understanding of an operating system and its functions. The UNIX operating system is used as an example. The course will include an overview of the UNIX operating system; UNIX system commands; calls, file formal and conventions. UNIX shell and shell programming will be highlighted.

(1.0 semesters)
Prerequisite: Assembler Language Programming II;
"C" Language Programming

Course Descriptions

ELECTRONIC TECHNOLOGY

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
Hackensack, New Jersey 07601

Program Area: ELECTRONIC TECHNOLOGY

Course Descriptions

Electrical Fundamentals I

This lecture/laboratory course provides an understanding of the direct current fundamentals that are used in electrical power and electronic circuits. Concepts developed in this course include scientific notation; electron theory of matter; current and voltage, resistance and Ohm's Law; and the solution of series-parallel circuits.

(1.5 semesters)
Prerequisites: None

Electrical Fundamentals II

This lecture/laboratory course focuses on alternating current circuits. Course topics include analysis of AC sine wave generation, phasor algebra, series AC circuits, series-parallel AC circuits, circuits analysis, network theorems, and power in AC circuits. Laboratory measurements provide a physical and readily verifiable method for right triangle solutions to impedance and network problems.

(1.5 semesters)
Prerequisite: Mathematics I

Electronics Fundamentals I and II

This lecture/laboratory course introduces the basic topics and experiments in the field of electronics. Semiconductor theory, bipolar junction transistors, field effect transistors, and amplifier characteristics are covered in this course.

(2.0 semesters)
Prerequisites: Electrical Fundamentals I, II; Mathematics II

Electronic Fundamentals III

This final course covering the fundamentals of electronics considers PNPN devices, integrated circuits (ICs) and linear ICs, feedback amplifiers, oscillators and cathode ray ocilloscope circuits. A lecture/laboratory course, this class prepares students for advanced work in electronic technology.

(1.0 semesters)
Prerequisites: Electronic Fundamentals I, II; Mathematics III

Digital Logic and Integrated Circuits I

This lecture/laboratory course is a practical introduction to integrated circuit (IC) technology based on the 7400 series of TTL ICs. The course considers the following: AND/OR logic gates; NOT circuit, NAND/NOR logic; dual gating functions and symbolic notation; number systems, including binary numbers and encoders; the decoder. Students are required to perform experiments on these circuits to verify the theoretical operation of the individual circuit configurations.

(1.0 semesters)
Prerequisites: Electronic Fundamentals I, II

Digital Logic and Integrated Circuits II

Presented in a lecture/laboratory format, this course in digital logic is also based on the 7400 series TTL integrated circuits. Course topics include: Exclusive OR/NOR gates, memory circuits and flip flops, counters, Boolean algebra, Karnaugh maps and registers.

(1.0 semesters)
Prerequisites: Digital Logic and Integrated Circuits I

Digital Logic and Integrated Circuits III

This is the final segment of a three-semester course in digital logic and integrated circuits. Topics of study include shift registers, ring counters, binary addition and subtraction, logic circuits and sequential control circuits. Laboratory work for this course includes verification of circuit operation and the application of ICs to specific functions.

(1.0 semesters)
Prerequisites: Digital Logic and Integrated Circuits II

Electrical Power Technology

This course develops an understanding of the theory and application of transformers, motors, and generators in electrical power circuits. The resolution of three-phase voltages and currents to rectangular components provides fundamental verification of vector addition and subtraction.

(1.0 semesters)
Prerequisites: Electrical Fundamentals II; Electronic Fundamentals III; Mathematics IV

Microprocessor and Memory Circuits

This lecture/laboratory course is designed to provide a systems understanding of the sub-components that comprise a microcomputer and to permit the observation and testing of the function of the lower level components. Specific topics of study are the following: arithmetic logic unit (ALU); memory; stack, stack pointer, and program counter; instruction register, decoding and sequencing; microprocessor configuration and single cycle operation; microprocessor operation.

(1.0 semesters)
Prerequisites: Electrical Fundamentals II; Electronic Fundamentals III; Digital Logic and Integrated Circuits II

Microprocessor Hardware and Systems

This course focuses on the operation and architecture of a microcomputer through the use of a microcomputer trainer which utilizes a 6502 microprocessor as the CPU. The application and interrelationship of the I/O board with the various signals and buses will be determined and observed at available test points. Included in the course are programs and procedures for hardware and systems troubleshooting.

(1.0 semesters)
Prerequisite: Microprocessor and Memory Circuits

Automated Control Systems

Linear DC and AC servo-control systems are the focus of this course. The concepts of feedback, overshoot, error detection and open/closed loop systems are developed in lecture class and verified by students through experimentation in the laboratory.

(1.0 semesters)
Prerequisites: A.P. Calculus I; Electrical Fundamentals II; Electronic Fundamentals III

Passive Networks I and II

This lecture/laboratory course develops techniques for analyzing passive lumped-parameter networks in terms of linear systems. Topics covered in this course include the unit step function, sinusoidal functions, complex frequency, Laplace and Fourier transform techniques.

(2.0 semesters)
Prerequisites: A.P. Calculus II; Electronics II

Course Descriptions

MECHANICAL TECHNOLOGY

Program Area: MECHANICAL TECHNOLOGY

Course Descriptions

Drafting Technology with Introduction to CAD (Computer Aided Design)

This lecture/laboratory course introduces the concepts of graphics language and the techniques for preparation of engineering drawings using both conventional equipment and computer-aided design equipment. Topics of study include alphabet of lines, techniques of lettering, geometric constructions, sketching and shape description, multiview projection, concepts of CAD, composition of a CAD system, shape and size generation, editing and modifications.

(1.0 semesters)
Prerequisite: None

Machine Shop Technology with Introduction to CAM (Computer Aided Manufacturing)

This lecture/shop course is designed to develop the student's ability to use the basic tools in a conventional machine shop and to familiarize the student with CAM techniques. Included in this course are the following topics: safety; hand tools; dimensional measurement and layout; sawing and drilling machines, turning machines, milling machines; concepts of CAM, composition of a CAM system; introduction to numerical control (NC) programming; programming of machine tools using computer graphics.

(1.0 semesters)
Prerequisite: Drafting Technology with Introduction to CAM

CAD Technology

This lecture/laboratory course is designed to equip students with a working knowledge of the techniques and applications of computer-aided design. Course topics include sectional views and revolutions, dimensioning and tolerancing, auxiliary views, axonometric projection, groups and symbols generation, working drawings and drawing management.

(1.0 semesters)
Prerequisite: Drafting Technology with Introduction to CAD

CAM Technology

This lecture/shop course concentrates on computer graphics and computer numerical control (CNC) machines. Areas of study include feed and speed calculations, set-up on CNC equipment, geometry and part generation, tool path definitions and considerations, transformations and repetitions, post-processor and data transfer. The course also extends the student's knowledge of machine tool practices using conventional equipment.

(1.0 semesters)
Prerequisites: Machine Shop Technology with Introduction to CAM; CAD Technology

Strength of Materials I and II

This course focuses on the methods used to determine the forces experienced by static bodies under load. Students will develop an understanding of tension, compression, shear force, and bending moment. Additional course topics include simple stress and strain; strain, stress and moment in beams; beam deflections, restrained beams, continuous beams; combined stress; columns; riveted and welded connections.

(2.0 semesters)
Prerequisites: Physics III; Mathematics IV

CAD/CAM Technology

This course integrates CAD design with the automation techniques of CAM manufacturing procedures. Three-dimensional modeling, intersections and developments, and assembly drawings are among the topics developed in this course.

(1.0 semesters)
Prerequisites: CAD Technology; CAM Technology

Fluid Mechanics I and II

This course introduces the student to the properties of fluids, hydrostatic forces, and the fundamentals of fluid flow. Course topics include fluid properties, statics and kinematics; continuity equation and energy equation; dimensional analysis; pipe flow, channel flow, and compressible flow; flow meters and flow through hydraulic structure.

(2.0 semesters)
Prerequisites: A.P. Calculus I; Physics III

Introduction to Robotics

This lecture/laboratory course in robotics includes computer-controlled devices, electro-mechanical devices and fluidic devices.

(1.0 semesters)
Prerequisites: Fluid Mechanics II; Electronics II; Assembler Programming

ADDENDUM: LOCAL NEEDS ANALYSES

BCSA STUDY OF THE PROPOSED SCHOOL OF SCIENCE AND TECHNOLOGY

In January of 1985, an ad hoc committee of the Bergen County Superintendents' Association was formed to study the draft proposal prepared by Dr. Grieco and staff for the Bergen County School of Science and Technology.

Included in this section is the following information:

A.	January 22, 1985	Survey Instrument
B.	February 8, 1985	Summary Report of Survey
C.	March 11, 1985	BCSA Position Statement
D.	May 8, 1985	Summary of Presentation to the Bergen County Freeholder Board Regarding the Proposed School
E.	July 18, 1985	Summary of Bergen County Educators' Reactions to the Proposed Bergen County School of Science and Technology

1/25/85

HACKENSACK PUBLIC SCHOOLS
355 STATE STREET
HACKENSACK, N. J. 07601
488-4100

BERNARD J. SACCARO, M.D.
PRESIDENT
ALEXANDER DI DONATO
VICE PRESIDENT
EDWARD J. AZZATO
HOWARD WILLIAMS
BARBARA J. ELDER

ANTHONY M. MARSEGLIA
SUPERINTENDENT

PETER J. CAPONE
ASST. SUPERINTENDENT FOR
BUSINESS/SECRETARY

January 22, 1985

Dear Colleague:

As you know, the Bergen County Vocational Technical School has proposed the creation of a County High School of Science and Technology. The proposal includes a core science and technology program for students of grades 9 through 12 as well as the availability of advanced placement courses on an individual basis.

As of this date, the Bergen County Superintendents' Association has not taken a formal position on the proposal, but has convened an ad hoc committee to study the concept and make a recommendation. I have been asked to chair that committee. After meeting on two occasions, it has determined that input from all Bergen County Superintendents is needed in order that we may make an informed assessment of need and impact.

I am asking, therefore, that you complete the attached questionnaire and return it to me no later than Thursday, January 31, 1985. I realize the tight time constraint but the committee is working with a very short timeline. Your cooperation is urgently needed and greatly appreciated.

Sincerely,

Tony M.

Anthony M. Marseglia

AMM:lss

BEST COPY AVAILABLE

BERGEN COUNTY SCHOOL OF SCIENCE AND TECHNOLOGY
a school development project proposed by the
Bergen County Vocational-Technical Schools

OVERVIEW:

The purpose of this school development project is to establish an exemplary high school of science and technology. The curriculum will consist primarily of mathematics, science and the technologies. AP level and advanced courses will be a part of the standard curriculum.

The uniqueness of the program lies in the integration of science, mathematics and the technologies which will bring alive for students the abstract concepts of mathematics and scientific principles through their application in high technologies. In the proposed high school program, for example, physics, chemistry, calculus and computers will be related to graphic displays, the control of robotic devices and the application of computer-aided design and manufacturing.

STUDENT PREPARATION:

This science and technology education will prepare students for scientific and engineering level college work. Science and engineering require the ability to conceptualize design patterns and to vary and test parameters that will produce the required results. This ability will be greatly enhanced and developed for students through mathematical models, scale models of physical devices, and structural forms that can be examined visually on a cathode ray tube display. The training and education provided in the science and technology curriculum will develop these basic skills.

CONCEPTUAL FRAMEWORK:

The new school will be considered as an extension of every public and private high school in Bergen County. The school expects to meet educational needs that are not currently met or cannot be addressed fully at the local level.

Students will be admitted on a competitive basis, with high aptitude for scientific and/or technological education, past performance and student interest being among the determinants for selection. An extrance examination will be administered by the school.

OPERATIONAL FRAMEWORK:

The school will operate on a shared-time basis, with students in attendance for 5 periods a day (mathematics, science and technology classes). The first class will begin earlier than the standard high school day so that students may return to the home districts for instruction in the humanities subjects and physical education. Students in grades 9-12 will be accommodated in Hackensack. (Students of the School of Science and Technology will NOT be part of the vocational school program.)

Students will also be admitted on a per course basis for AP level and advanced subjects. These students will not be required to sit for the entrance examination, but must meet all prerequisites for the course(s) they wish to pursue.

CURRICULUM:

Programs will be patterned in quality after such secondary schools as the Bronx High School of Science, Stuyvesant High School in Manhattan, and Brooklyn Technical High School.

Students in grades 9 and 10 will follow a core curriculum which will expose them to the elements of high technology* and prepare them for advanced level study in an area of specialization.

*High technology is defined here as the application of computer systems and technology to the solution of scientific and engineering problems.

Grade 9: All students will take mathematics, physics, electrical fundamentals and computer science.

Grade 10: All students will take mathematics, physics, electronic fundamentals, computer science and one semester of chemistry. To complete their program students will opt either (1) biology and a second semester of chemistry; or (2) two semesters of mechanical technology.

Grades 11 & 12: Students will elect one of the following areas of specialization, following a sequence of courses applicable to the study major. Areas of specialization include: Mechanical Technology, Computer Science, Electronic Technology, Mathematics and Physics, or Chemistry and Biology. (Biotechnology is projected as a future study major.)

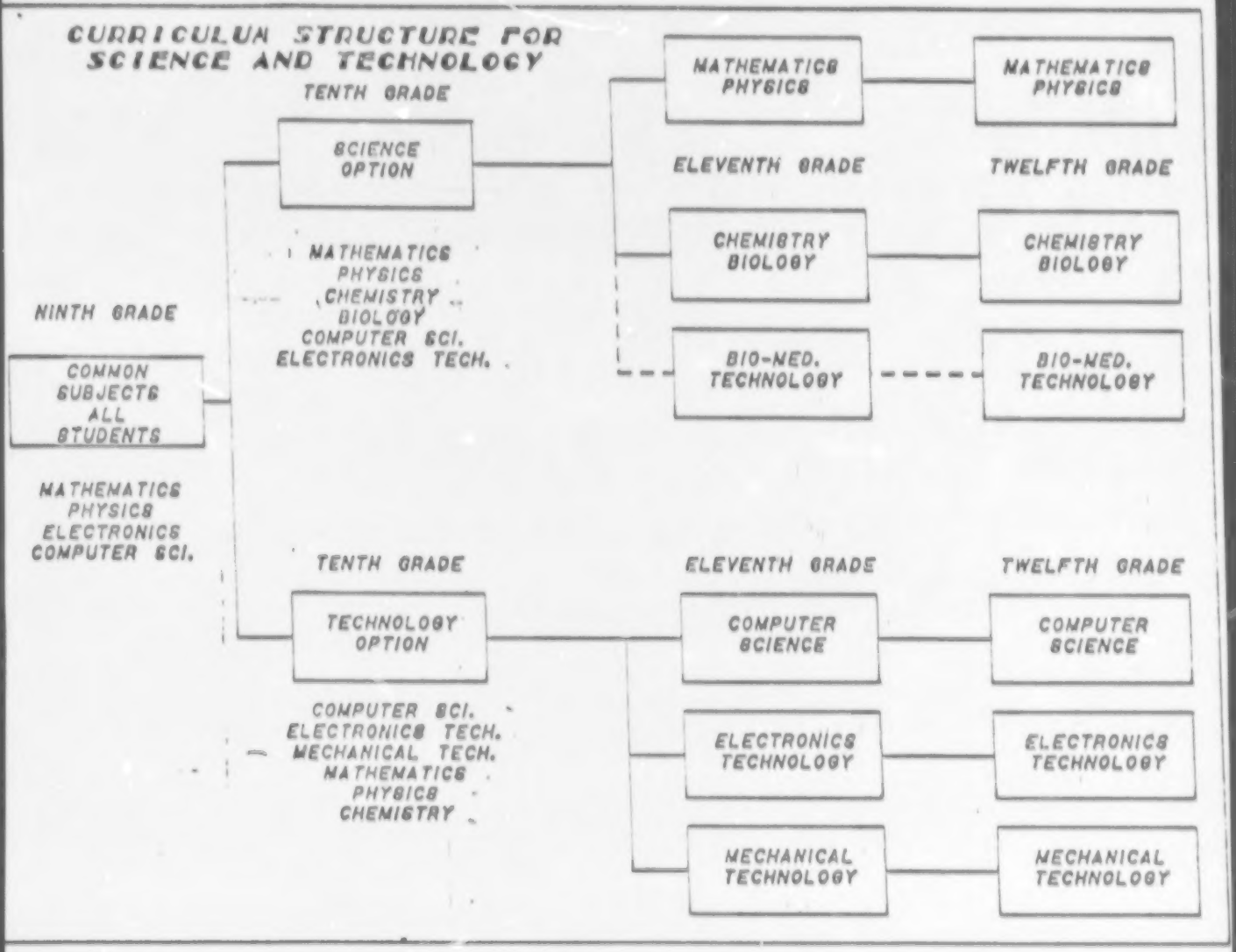
STUDENT PERSONNEL SERVICES:

While students will maintain a strong identity with the local district for student personnel services, the new school will also provide career counseling, college planning assistance, and personal counseling.

ADDITIONAL INFORMATION:

For additional information, please contact Dr. John Grieco, Superintendent, Bergen County Vocational-Technical Schools.
(Phone: 343-6000, ext. 201)

BEST COPY AVAILABLE


CURRICULUM STRUCTURE FOR SCIENCE AND TECHNOLOGY
NINTH GRADE
COMMON SUBJECTS ALL STUDENTS
MATHEMATICS PHYSICS ELECTRONICS COMPUTER SCI.
TENTH GRADE
SCIENCE OPTION
MATHEMATICS PHYSICS CHEMISTRY BIOLOGY COMPUTER SCI. ELECTRONICS TECH.
ELEVENTH GRADE
MATHEMATICS PHYSICS
CHEMISTRY BIOLOGY
BIO-MED. TECHNOLOGY
TWELFTH GRADE
MATHEMATICS PHYSICS
CHEMISTRY BIOLOGY
BIO-MED. TECHNOLOGY
TENTH GRADE
TECHNOLOGY OPTION
COMPUTER SCI. ELECTRONICS TECH. MECHANICAL TECH. MATHEMATICS PHYSICS CHEMISTRY
ELEVENTH GRADE
COMPUTER SCIENCE
ELECTRONICS TECHNOLOGY
MECHANICAL TECHNOLOGY
TWELFTH GRADE
COMPUTER SCIENCE
ELECTRONICS TECHNOLOGY
MECHANICAL TECHNOLOGY

Bergen County Superintendents' Association
January 21, 1985

Please return by: January 31, 1985
Send to: Anthony M. Marseglia
355 State Street
Hackensack, N. J.
07601

A-5

Name of District: _____ Contact Person: _____
Grade Levels Served: _____

District Enrollments (1984-85) by Grade Level:
7th ____ 8th ____ 9th ____ 10th ____ 11th ____ 12th ____

Part I: Advanced Studies/Honors Courses currently provided in your district:

A. 7th and 8th Grade Students:
Please indicate the number of students presently enrolled in the following courses:

	7th Grade	8th Grade
Algebra I		
Geometry		
Algebra II		

Honors Science or other Honors Math courses:
(please name course(s))

B. 9th - 12th Grade Students
Complete the chart for all AP and second year Advanced Math and science courses offered in your district:

Course	No. Students Enrolled 1984-85	Projected Student Enrollments 1985-86	1986-87
Calculus Level I			
Calculus Level II			
Calculus Level III			
Advanced or AP Physics			
Advanced or AP Chemistry			
Advanced or AP Biology			
AP Computer Science			
Computer Science: Pascal			
Computer Science: C			
Other:			
Other:			
Other:			

C. Comments _____

BEST COPY AVAILABLE

A. What advanced or AP Math and/or Science courses, if any, would be beneficial to your students if offered on a regional level?

Course/Program	Potential Enrollments		
	1985-86	1986-87	1987-88

B. Comments _____

_____

_____

Part III: High School for Science and Technology

A proposal for a county High School of Science and Technology is currently being explored by the Bergen County Vocational-Technical Schools. The new program is designed to include a core of integrated subjects in mathematics, the sciences and high technology in grades 9 and 10, and one of six specialization majors in grades 11 and 12. The program will include AP level and advanced courses. This is a unique program which projects the knowledge and skills which will be required of 21st century scientists, engineers, and technologists. Curriculum will be presented in a manner which interrelates the sciences, mathematics, the computer and electronics. (See attached summary for additional information).

a. Do you envision a need for or an interest in this type of program for some of your students? Yes ___ No ___

b. If yes complete the chart below (see attached material) How many students from your district are likely to select each of the programs listed?

Program Area Needed	Project Student Enrollments: 1986-87	1987-88
Mechanical Technology		
Electronic Technology		
Computer Science		
Math/Physics		
Chemistry/Biology		
Biotechnology		

C. Comments _____

_____

_____

BEST COPY AVAILABLE

Part IV: Program Impact

If implemented what impact, do you believe the proposed county High School of Science and Technology will have on your district? Please include programs, finances, and other commentary.

Thank you for taking the time to complete this survey.

HACKENSACK PUBLIC SCHOOLS
355 STATE STREET
HACKENSACK, N. J. 07601
488-4100

BERNARD J. SACCARO, M.D.
PRESIDENT
ALEXANDER DI DONATO
VICE PRESIDENT
EDWARD J. AZZATO
HOWARD WILLIAMS
SAREARA J. ELDER

ANTHONY M. MARSEGLIA
SUPERINTENDENT

PETER J. CAPONE
ASST. SUPERINTENDENT FOR
BUSINESS/SECRETARY

February 8, 1985

Dr. John Grieco
Superintendent
Bergen County Vocational Technical Schools
200 Hackensack Avenue
Hackensack, N. J. 07601

Dear John:

Enclosed is a summary report of the survey conducted on the Bergen County Vocational/Technical High School for Science and Technology.

Please review them so we can discuss the findings at our next meeting. I would like to meet on Friday, February 15 at 9:30 a.m. at Bergen Tech. Please let my office know as soon as possible if you are available for this meeting. Unless a significant number can attend this meeting, I will need to re-schedule it.

Sincerely,

Tony M.
Anthony M. Marseglia
Superintendent

AMM:lss

BEST COPY AVAILABLE

Distr/Supt	Grade 7/8 ENR	Alg I	Alg II	Geo	Grade 9/10/11/12 ENR		Calculus I	Calculus II	Calculus III	AP or Advanced Phy	Chem	Bio	CS	Pys	C	Other
Allendale	76 / 82	11 / 11														
Alpine	7 / 10	2 / 5														Advanced Algebra 2 students
Bergen C. Spec. Services																
Bergen Co. Voc.					243 / 761	762 / 525								12		CAD -40 CAM -18 A.A.S Degree- 14
Bergenfield	234 / 263	110			298 / 320	308 / 316	16			12	14	10		28	135	Biochemistry - Math 7A - 100 College Math -
Bogota	102 / 76	16			91 / 101	101 / 122	19					26			72	Latin I - 7 Spanish I - 28
Carlstadt	55 / 59				137 / 133	124 / 133				16	8	1				Adv. Science - 1
Carlstadt - East Rutherford																
Cliffside Park																
Closter	104 / 100	46														Advanced Placeme Science - 46
Cresskill	77 / 112	34			103 / 113	123 / 118		17								
Demarest																
Dumont	186 / 211	88			237 / 238	203 / 239	33			16	21	16	16	5	10	Computer Math - Math - 7th Gr. Honors - 69
East Rutherford	56 / 64															
Edgewater	NOT APPLICABLE															
Elmwood Park																
Emerson	72 / 79	20			111 / 92	90 / 125	20			9	16					IPS - 20

BEST COPY AVAILABLE

Distr/Supt	Grade 7/8				Grade 9/10/11/12		Calculus			AP or Advanced						
	ENR	Alg I	Alg II	Geo	ENR		I	II	III	Phy	Chem	Bio	CS	Pws	C	Other
Englewood Cliffs	39 / 52	18 / 24														
Fair Lawn																
Fairview	65 / 67															
Fort Lee	164 / 205	31			211 / 232	200 / 212	14			6		8			5	C: Prog: 1 = 180 C: Prog: 2 = 35 Fund. Computer 200
Franklin Lakes	140 / 172	50 / 80	1	1												
Garfield																
Glen Rock		78					13	14		14	14	14		28		Algebra III - 13 V. Biology - 10
Hackensack	221 / 224	25			512 / 418	346 / 424	12			10	12	17		8		Adv. Math - 60 Microcomp. - 71 Computer Math - 19
Harrington Park																
Hasbrouck Heights	84 / 101				109 / 118	113 / 107	15			1	1				200	
Haworth	37 / 37	18														
Hillsdale	95 / 129	27														Advanced Math-26-2 " Sci. -26-2
Hohokus	60 / 60	25														Advanced math - 25
Leonia																
Little Ferry	Received questionnaire, however, no data submitted.															
Lodi																
Lyndhurst	148 / 159				159 / 176	167 / 159						20		10		BASIC - 58 Adv. Math - 16 Human Anat. - 12
Mahwah	128 / 146	53			154 / 180	140 / 156	19		6					12		

DISTR/SUPT	GRADE 7/8 ENR	Alg I	Alg II	Geo	Grade 9/10/11/12 ENR	Calculus I	Calculus II	Calculus III	AP or Advanced Phy	Chem	Bio	CS	Phs	C	Other
Maywood	84 / 92	24													
Midland Park	58 / 82	27			153 / 137 — 142 / 165	25			16	20	28	6	32		7th gr. Honors Ma 8th gr. Honors Sc 25 each class
Montvale	112 / 111		29												Pre-Algebra-30 7t Advanced CS-16 8t
Moonachie	31 / 21														Physical Sci.30 8
New Milford															
North Arlington	111				115 / 133 — 131 / 138	15			11		9				
Northern Highlands Reg.H.S.	200 / 220				240 / 250 — 250 / 260	50	40		60	40	118			18	
Northern Valley Regional H.S.					507 / 525 — 567 / 551	61				52	33	31	192		
Northvale	50 / 74	15		3											
Norwood															
Oakland															
Old Tappan	58 / 66	19													
Oradell															
Palisades Park	97 / 125	49 / 49			119 / 127 — 124 / 125	24									
Paramus		237 / 274			317 / 310 — 337 / 378										
Park Ridge	88 / 84	27			108 / 110 — 122 / 130	21	21		23	9				85	
Pascack Valley					463 / 512 — 504 / 527	69	54		61	19	48		52		
Ramapo Indian					632 / 614 — 591										

Distr/Supt	Grade 7/8 ENR	Alg I	Alg II	Geo	Grade 9/10/11/12 ENR	Calculus I	Calculus II	Calculus III	AP or Advanced Phy	Chem	Bio	CS	Phs	C	Other
Ramsey	150 / 188	25			237 / 260 — 246 / 246	27			15	15	40	17			
Ridgefield	97 / 94	22			104 / 100 — 104 / 98	17			16	9	17		12		Hon. Earth Sci.-27
Ridgefield Park	101 / 118				186 / 187 — 195 / 208	35					34		21		BASIC - 77 Honors Chem. - 25
Ridgewood	350 / 430	7 / 142	5	5	450 / 440 — 500 / 450										
River Dell Reg. H.S.															
River Edge															
River Vale															
Rochelle Park															
Rockleigh															
Rutherford	181 / 189	38			221 / 194 — 185 / 168	30	21	9		22	18		25		Life Science 43-7th 16-8th ~~Physical Sci.-23-8th~~
Saddle Brook	116 / 118				143 / 102 — 117 / 117	9								96	
Saddle River	32 / 32	10													Pre-Algebra - 12
South Hackensack															
Teaneck	349 / 357				455 / 462 — 414 / 371	57	48	19	7	9	37	23			SSMCIS 9-11 - 144 Physics Honors - 3 ~~Chem - Honors~~ - 42
Tenafly															
Teterboro															
Upper Saddle River	114 / 144	20													Accelerated Math 7th - 18 8th-18
Waldwick	109 / 130	43 / 31			154 / 143 — 142 / 160	20	17		21	18	13	11			Math Research Intro. Physical Sc 24 - grade 8

Distr/Supt	GRADE 7/8 ENR	Alg I	Alg II	Geo	ENR	Calculus I	Calculus II	Calculus III	AP or Advanced Phy	Chem	Bio	CS	Pas	C	Other
Wallington	77 / 91				82 / 98	77 / 83	10					11			Probability & Sta - 10 Computer Math - 78
Westwood Regional	220 / 211	20 / 25		16	247 / 225	229 / 290				22	16				Calculus - 21 Vector & Matrix - 2
Woodcliff Lake		32													Computer Literacy 8
Wood Ridge		23 / 17			91 / 80	93 / 93		7			10	--			Computer Math - 10
Wyckoff															

District: ALLENDALE

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

No impact on Allendale K-8. However, such a program could impact the Regional High School. Personally, I see no need or value to this county high school proposal. I believe our present high schools could consolidate in this area and effect a program of studies superior, economically more reasonable, and much more reasonable to student needs. One disturbing note regarding this proposal is that the vocational high school has already gathered support from "political" allies before we have even had an opportunity to study and support, modify or reject the proposal. It seems whatever we decide will have minimal impact since the "green" light has apparently been given.

District: ALPINE

No comments given in areas II through IV.

District: BERGENFIELD

IIA. Needs: None

B. Comments:

We presently offer and in our projection will continue to offer, advanced or AP math and/or science courses.

IIIA. Interest in Program: No

C. Comments:

Program is a duplication of our efforts. We also have 24 students involved in third year level electronics and robotics.

IV. Impact:

Time lost in traveling and scheduling problems due to 5 periods expected. We have some concerns about technological applications being offered that early on a high school level, since the need is for more theory. Recent research shows that students should prepare for more than one career -- the study of humanities still plays an important part in preparing successful leaders and managers.

District: BOGOTA

IIA. Needs: None

B. Comments: Difficult to determine enrollments. They would be small.

IIIA. Interest in Program: No

C. Comments: If a program of this nature came about, the most capable academic students would be taken from our school and the present programs would be diminished.

IV. Impact:

This topic and proposal was discussed with the Bogota High School administrators and department chairpersons. Attached is a memo from Dr. Frederick reflecting their concerns.

I personally feel that the top academic students from districts that are "remote" from the Hackensack location who would be interested in such a program could well be the death knell to good AP programs already in existence.

District: CARLSTADT

No comments made in Sections II, III, and IV.

District: CRESSKILL

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: None

C. Comments: None

IV. Impact:

Little, if any at present. However, it may have the potential of skimming off our top students in these areas. The initial program of having five classes at the Bergen Tech. School in Hackensack and the remainder of their required courses in their local school will present an impossible scheduling situation. (i.e. students will not be able to attend both schools if they spend five periods in the High School of Science and Technology). In addition, there will be a need for transportation and the costs associated with it.

Memorandum to: Mr. Henry C. Luthin
From: Ronald J. Frederick
Date: January 8, 1985
Reference: Review of Bergen County School of Science and Technology

I have had my department chairpeople review the working draft of the Bergen County School of Science and Technology as proposed by John Grieco.

It is our conclusion that the idea of individualizing the advancement of learning, in any field, can be better accomplished in a comprehensive high school setting without fragmenting an already viable institution.

Such a school would isolate students from the rest of the student body in both full-time and shared-time concepts.

This concept of separate schools is not in the best interest of education. There is no evidence to substantiate such a change in the Report of the National Commission on Excellence in Education or the Carnegie Foundation Report.

It is our feeling that the already established approaches within the existing school structure seems to hold more success for a "prepared" America.

District: CLOSTER

comments made in Sections II through IV.

District: DUMONT

IIA. Needs: AP Chemistry and AP Physics courses

B. Comments: None

IIIA. Interest in Program: No

C. Comments:

The proposal listed above doesn't make any sense. The knowledge and skills required of 21st century scientists, engineers and technologists, sinply cannot be taught or interrelated on a high school level. The students must first obtain a complete understanding of the basic concepts in each of the sciences and these programs usually extend into the third year of college. Then, the fundamental concepts can be applied to the applied science classes of biotechnology, etc. Even the colleges don't attempt this relationship until the third or fourth year of the undergraduate program. To do any of this work in science/industry one must have graduate work, somtimes far beyond the master degree program. It always requires a maturity of thought processes and concept development that cannot be attained by this age student.

I think the planners who proposed the programs should convene a conference at which they seek advice from all college engineering and math professors and engineers presently employed on the job with degrees (BA, MA, Ph.D.) to better understand the complexities of the professions involved.

The so-called technical training of the technicians of the future also requires a level of sophistication not particularly adaptable to the high school student nor his teachers. The research and development of the major companies are continaully retraining their own technicians as new equipment, new product lines, and new concepts are developed. School personnel could not be expected to be on the cutting edge of innovation.

District: EAST RUTHERFORD

No comments made in Sections II through IV.

District: EDGEWATER

No comments made in Sections II through IV.

District: EMERSON

IIA. Needs:

AP Physics or BC Calculus

B. Comments: None

IIIA. Interst in Program: Yes

C. Comments: None

IV. Impact:

If we are talking a total immersion program (full day, integrated super high teach. for the math/science Genius (math/science IQ of 150+, then I envision no impact on Emerson JR. SR. High School. Perhpas, one student per two years.

If we are talking about sending districts for one or two courses, AP or other, this could impact us severely and hurt us -- possibly 5 or 6 each year.

District: ENGLEWOOD CLIFFS

No comments made in Sections II through IV.

District: FAIRVIEW

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments:

I could not project at this time. We used to offer Algebra I in Grade 8 when we had more students.

IV. Impact:

No comments made in this section.

District: FORT LEE

IIA. Needs:

Level C AP Physics

District: FORT LEE (continued

IIB. Comments:

At the present time, we teach level B AP Physics as well as AB Caculus. Should there be an interest in the Advanced Physics Level C, then Level C Calculus should also be taught.

IIIA. Interest in Program: No

C. Comments:

The only area in which we might be interested would be electronics. There is a possibility of the science department picking up the electronics area in the future.

IV. Impact:

Idealistically, if school districts have small AP programs, it might be to their advantage to have a districtwide opportunity provided students so that many might be served. However, if a specialized school took the best students from the many school districts, it would definitely have an affect on the tone and curriculum of the various high schools. Here in Fort Lee, we feel that there is a possibility of one or two students being interested in such a program, but we feel students would prefer to take the AP programs in their own school. In some cases, in addition to AP areas, these students are interested in music, and consequently, they would like to remain in their otwn buildings in order to get the music program. One suggestion that might be considered would be an opportunity provided to Bergen County students on Saturday so that local school districts could continue with their programs and students would have the opportunity of studying specialized areas beyond these programs on a Saturday morning.

District: FRANKLIN LAKES

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

It is my opinion that the individual districts can best meet the needs of its students. The students in this district excel in all academic areas. Individualization is provided for all students in all areas- Computer Science has been a standard program and is one example of the opportunities provided to the students. I really have strong reservations as to how another high school would be of value to the students of Franklin Lakes.

District: GLEN ROCK

IIA. Needs:

Unified Math and full year Advanced Biology, Chemistry, and Physics

B. Comments:

Our Advanced Science Program offers half year courses. A few students would be interested in full year courses.

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

Very little. Our students have had the opportunity to pursue these courses in Waldwick High School. Very few of them have done so. We do need some special opportunities for the extra-ordinary. highly motivated students.

District: HACKENSACK

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

We currently offer a full array of courses. It is doubtful any of our students would opt for such a program. If a few did, it might cause enrollment problems with some of our advanced courses.

District: HASBROUCK HEIGHTS

IIA. Needs:

Chemistry, Biology, Physics, Computer Science, and Calculus.

B. Comments: None

IIIA. Interest in Program: No

C. Comments:

I believe that high school students are too young to "major". They should receive a well-rounded education that will prepare them to specialize once they make their college decisions.

BEST COPY AVAILABLE

District: Hasbrouck Heights (continued)

IV. Impact:

Some of our best students who provide role models and inspiration for others may be lured away. This could result in certain very small classes being cancelled which would deprive the students left behind of program offerings.

District: HAWORTH

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

In time, we would draw a significant number of bright students from local high school matriculation. This compounded with students going to Holy Angels and Bergen Catholic would siphon off a significant number of students to local high school.

District: HILLSDALE

No comments made in Sections II through IV.

District: HO-HO-KUS

No comments made in Sections II through IV. See Midland Park High School response - receiving relationship.

District: MAHWAH

IIA. Needs: AP Chemistry and AP Biology

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

While there is a need for this program for approximately 5 or 6 of our students, the disadvantages far outweigh the advantages. The curriculum presented is not a balance one allowing little or no opportunity for arts and humanities. High School should provide a comprehensive program enabling students to see a broad perspective with many choices for future specialization

District: MAHWAH (continued)

IV. Impact (continued):

This technical high school forces a 14 year old to limit his/her educational horizon to science or math four years before he should have to made that choice.

For our students, it would be almost impossible! If they spent 5 periods in Hackensack, a 6th period in traveling, when would they take physical education and social studies? They might never be able to take typing, art, a business course, or home arts. They would have little social life or opportunity for leadership roles within the school.

This project appears to have little chance for real success. Let's put our energies into other projects which have a brighter outlook for improving educational opportunities for our students.

District: MAYWOOD

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments:

From field playback, we would expect that 20% of each 8th grade class annually would be interested and would be talented enough to participate in such a highly selective program.

IV. Impact:
K-8 district.
I would recommend consideration of a concept high school in music/art not in the sciences. Our student's science/technology needs in the broad scale are being served, music/art not so.

District: MIDLAND PARK

IIA. Needs: None

C. Comments:

At the present time, we feel we are servicing our student population quite well.

IIIA. Interest in Program: Yes

C. Comments:

I feel the courses you are offering are more technically oriented than ours. We emphasize the more academic part of the course.

IV. Impact: Very little.

District: MONTVALE

IA. Needs:

*Honors Math I

B. Comments:

*Math/Computer Ed. Facilitator projection. If there is a need, it seems that it could be offered in cooperation with P.V.R.H.S. District and course developed through our inter-district math articulation team.

IIIA. Interest in Program: No

C. Comments:

Pascack Hills High School offers Computer Science that will include Pascal next year. Our science curriculum facilitator advises that the programs listed in B above are community college type courses which he feels are terribly appropriate for pre-professional students at the secondary level.

IV. Impact:

Assuming that the program will be designed for Grades 9-12, the only impact envisioned might be pressure for additional preparatory courses in math and science at the seventh and eighth grade levels for students with the aptitude and inclination to participate in the County High School of Science and Technology program. If an entrance examination were required, there could also be pressure to teach to the examination. Educational administrators in Montvale generally believe that the strength of the public high school is its diversity of program for students at all ability levels. "High expectations" for a larger number of students is possible because of the diversity of the student population.

Our Science Curriculum Facilitator advises that many of our students have placed a very special emphasis on science in their future, especially the integration of microcomputers into their technical training.

The location of such a high school may effect student's decisions to participate. They may also choose not to ride to Hackensack to take courses. Participation in inter-scholastic and co-curricular activities may be consideration also. The vocational satellite school model already in existence may negate these factors.

District: MOONACHIE

IA. Needs:

Algebra I, Biology I, and Computer Science.

B. Comments: None

District: MOONACHIE (contined)

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

It is very difficult to provide an accurate assessment of our district's needs in the AP areas due to our district's size. It would impact financially on our district in the areas of tuition and transportation.

District: NORTHERN HIGHLANDS REGIONAL

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

Not necessarily my disrict but I think all high school districts would suffer. I don't think the proposed school would or could offer advanced courses as well as we do now. I do not believe the teachers are available. Transportation would be difficult. I question the need for such a school. A survey of what is being given now in existing schools would be helpful.

District: NORTH ARLINGTON

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

If this program is implemented, it will have several undesirable consequences in our district:

It will remove from our classrooms young people who are our a academic leaders and catalysts, thus depriving other students of their skills and input.

We are a minimum aid district, and the loss of those students will mean a further decline in the minimal aid district, and the loss of those students will mean a further decline in the minimal aid we receive from the state.

District: NORTH ARLINGTON (continued)

IV. Impact (continued)

Loss of students could impact on the number of teachers we can retain.

Tuition and transportation costs for local students attending the new school will further drain financial resources already limited by caps and budget defeats.

Finally, a loss of students from this high school could result in two scheduling difficulties: A loss of courses due to under enrollment and an increase in the number of singleton courses, limiting course availability for students.

District: NORTHERN VALLEY REGIONAL

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

Since our district provides many Honors, Advanced Placement, and advanced level courses, the overall impact on curriculum would be negligible. However, since some of these advanced class sections have relatively small enrollments, the loss of students to an out-of-district program could jeopardize running these classes. Also, such a program would draw away from the local high schools, student leaders who contribute much not only to the classroom learning experience, but also to school activities in general.

District: NORTHVALE

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

Very little since we are K-8. However, I strongly feel that this program would be detrimental to many of our high schools in Bergen County.

District: OLD TAPPAN

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C: Comments:

Since our students attend Northern Valley Regional High School, a comprehensive high school that already has most of these courses, we do not see any interest from this student population. There may be the need for the school since, because of smaller high schools in Bergen County that cannot offer these programs, maybe a few students from each of these schools are missing these opportunities. However, in attracting such students, a depletion of "honors" courses may occur.

IV. Impact:

No significant impact anticipated because of the reasons stated under Part III-C.

District: PALISADES PARK

IIA. Needs:

AP Math A/B and/or BC, AP Biology, AP Chemistry, AP Physics

B. Comments:

Because we presently have no AP courses, it is difficult to ascertain what enrollments might be if they were offered.

IIIA. Interest in Program: Yes

C. Comments: None

IV: Impact:

I believe that the proposed County High School of Science and Technology would not hurt us numerically and would allow our more gifted math and science students to take courses in keeping with their abilities.

District: PARAMUS

IIA. Needs: None

B. Comments:

Our present offerings meet the needs of our students at this time.

IIIA. Interest in Program: No

C. Comments:

In mathematics and science, our curriculum offers an extensive selection of courses to challenge our students and to satisfy their needs and interests.

IV. Impact:

At present, the proposed County High School of Science and Technology would not have a positive impact on our district. We presently offer a wide-range of subjects similar to what the proposed high school would offer, and we believe our offerings are viable and provide quality education to our students. Although our total enrollment is declining, we feel the courses are solidly entrenched here and successful. Three or four years from now our enrollments may necessitate a review of our present position, but only time will tell.

District: PARK RIDGE

IIA. Needs: None

B. Comments:

Park Ridge has the capability of offering other courses to meet the needs of individual students through a well-organized independent study program.

IIIA. Interest in Program: Uncertain

C. Comments:

As stated above, Park Ridge offers or has the capability of offering subjects to meet the needs of our students. We do not anticipate dropping advanced programs. Our graduates have responded and they were well prepared in Science and Mathematics when going to higher education.

V. Impact:

We are uncertain of the impact for two reasons. First, we are not clear on the level of students who would be offered the opportunity. Second, we believe the five periods per day in Mathematics and technology would seem a lot to advanced students who are seeking a comprehensive program.

District: PARK RIDGE (continued)

V. Impact (continued):

Park Ridge is finding considerable difficulty maintaining programs in business, fine arts, and for the non-college bound generally. This appears a greater need for us rather than the proposed school.

District: PASCACK VALLEY REGIONAL

IIA. Needs: None

B. Comments:

Every year a handful of students will have exhausted all Honors and AP courses of interest to them. I am certain they would find intro. college level and super advanced courses of interest.

IIIA. Interest in Program: Yes

C. Comments:

Difficult to answer.

V. Impact:

I feel the impact would be terrific. The impact would be felt throughout the entire program -- not just science and math since the better science and math students are generally your better English, social studies, and foreign language students. Therefore, a much larger impact on all programs. Re-operational framework -- the time schedule will present a problem. If the first class is to start 45 minutes before the local school, this means that class will being at approximately 7:15 a.m., which means that the students will be waiting for busses at 6:15 a.m. The return trip will take at least 45 minutes. Add time for lunch and the LEA time is down to 2 periods at best -- hardly enough time for English, history, and P.E., along with Choir, Art, etc. Also, the time available for contact with guidance, extra-curricular activities would be adversely affected. Re finances, would the formula for aid be calculated differently since we would be sharing the students with the County? Re the entrance exam, would students be selected in descending order according to their scores on the test -- is this the only criteria?

District: RAMAPO INDIAN HILLS

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

This district is currently offering AP work in all disciplines and therefore we do not feel that our students would be attractied to this type of county high school.

District: RAMSEY

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

It would decimate our accelerated programs. Local school districts generate a lot of publicity and therefore, local support through the achievements of their top math and science students. Having these students to work with also keeps some of our best math and science teachers in education. The loss of top math and science students might well be followed by the loss of some top teachers.

District: RIDGEFIELD PARK

IIA. Needs:

Bio-Med, and Electronics, 15 students each class.

B. Comments:

Bio-Med and Electronics have a very limited number of students.

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

See attached.

RIDGEFIELD PARK PUBLIC SCHOOLS
Ridgefield Park, New Jersey

PART IV PROGRAM IMPACT

The proposal, on balance, will result in a deficit condition for our particular local setting. The reason I believe this statement is true is because the local high school presently offers (and continues to respond with new developments) science, math, and technology programs matched to students' interests, needs, and abilities. Moreover, there are attempts to integrate technology (computers) into math and science sequences and address the question of application and career implications.

Too, college preparatory courses are less expensive for local districts to operate - unlike the more traditional vocational programs - and, consequently, present no imperative for centralization as per the "magnet" concept.

Lastly, the question of quality and equality needs to be addressed. Granting the presumption that some substantive gain is to be realized in terms of quality programming using a county school arrangement, I would argue that these gains are not real enough to balance the loss of a very viable element of the local student body. The financial-quality question relative to cost-benefit ratio is not the same or as high as the same ratio applied to vocational education. Without the overwhelming cost-benefit argument at their disposal, the tradeoff becomes even more costly to local districts inasmuch as student interaction and our long standing committment to promoting egalitarianism and quality would suffer. Imagine a student body void of students taking advanced placement or honors courses. Similarly, local districts might find it harder than ever to raise revenue for needed program improvements without an obvious target population to benefit.

Unfortunately, the proposal seems to me to be a response to Bergen County Vo-Tech's problems relative to a declining student population. Local schools of our relative size can offer similar quality of programming outlined in the Bergen County proposal. The old arguments of resource duplication and cost-benefits of centralizing do not factor out in favor of the local high school and would make future attempts to upgrade offerings impossible.

District: RIDGEWOOD

IIA. Needs: None

B. Comments:

We already offer Advanced Placement courses in both math and the sciences.

IIIA. Interest in Program: No

C. Comments:

We already offer extensive, in-depth courses in math, computer science, science and industrial arts. Computer science, in fact, is a separate department in the high school.

IV. Impact:

I don't think this program would have any effect in our schools.

District: RUTHERFORD

IIA. Needs:

We presently offer AP Biology, Chemistry, Mathematics, and PASCAL.

B. Comments:

Would be interested in AP Physics.

IIIA. Interest in Program: Not known

C. Comments:

Our students seem to prefer taking courses at Rutherford High Schools rather than on an exchange or shared-time option.

IV. Impact:

It would probably destroy our own AP curriculum and would limit some honors and elective courses. Our students would need a minimum of 5 periods. Thus you would have to extend your prepared schedule.

District: SADDLE BROOK

IIA. Needs:

AP Calculus

B. Comments: None

IIIA. Interest in Program: No

C. Comments: None

District: SADDLE BROOK (continued)

V. Impact:

The program could affect our ability to offer calculus, chemistry, physics, and biology in our high school.

District: SADDLE RIVER

IIA. Needs: None

B. Comments:

Believe current offerings at Ramsey High School in these areas are more than adequate.

IIIA. Interest in Program: Yes

C. Comments:

Impossible to estimate but it would be minimal.

IV. Impact:

None on my district, but I can see it having an adverse impact on existing programs in most high schools.

District: TEANECK

IIA. Needs: None

B. Comments:

Other than existing courses.

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

We are looking to the program to supplement existing AP offerings -- to offer opportunities outside the school day and perhaps on a partial inside -- seems like a wonderfully rich opportunity in need of further adaptation.

District: UPPER SADDLE RIVER

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments:

We anticipate that 3 or 4 of our 8th graders each year would be interested and eligible to take an entrance exam.

IV. Impact:

A great opportunity for bright Math and Science oriented students to look at.

District: WALDWICK

IIA. Needs: None

B. Comments:

Our major goal is to retain what we presently have.

IIIA. Interest in Program:

Very limited if we retain our present program. Yes, if we lose them.

IV. Impact:

With declining enrollments, if we lose potential local students or exchange students (GR, MP), the advanced courses may be in jeopardy as voters become more budget conscious. I believe that math and science at all levels is the responsibility of the local district. If it alone cannot offer a program, it should examine two options: 1. Sharing programs with neighboring districts, and 2. Seek regionalization.

However, I do believe there can be a special mission for a county school. This could entail: 1. A center for shared programs for surrounding districts. (An academic satellite, supplementary other regional centers, and 2. Offeirng highly innovative offering that individual schools cannot develop. The example: a research seminar in math and one in science to develop Westinghouse papers.

District: WESTWOOD REGIONAL

IIA. Needs: None

B. Comments:

The Westwood Regional School District is the seventh largest school district in Bergen County, and enrollment projections

District: WESTWOOD REGIONAL

B. Comments (continued)

indicate that it will maintain this relative position. The district has had the capacity in the past, and will in the future, to offer Advanced Placement Mathematics and Science courses to it students. Current programming has been more than satisfactory to meet admission requirements to all major Technical Colleges and Ivy League Institutions.

IIIA. Interest in Program: No

C. Comments: None

IV. Impact:

1. Serious impact on Gifted and Honors programs.
2. Remove the necessary balance required for a total educational program.
3. Impact on humanities offerings.
4. The length of the school day at the Technical School plus travel time, plus lunch will leave the home school at a disadvantage.
5. Withdrawal of local community support for local school program.
6. Withdrawal of state aid to school districts because of the loss of pupils.
7. Increased costs for transportation reimbursed two years later.

District: WOODCLIFF LAKE

No comments made in Sections II through IV. See attached letter.

District: WOOD RIDGE

IIA. Needs: None

B. Comments:

Regional offerings would have more negative than positive effects on this school.

IIA. Interest in Program: No

C. Comments: None

IV. Impact:

As proposed, first year would be shared-time, a scheduling nightmare.

Woodcliff Lake Public Schools

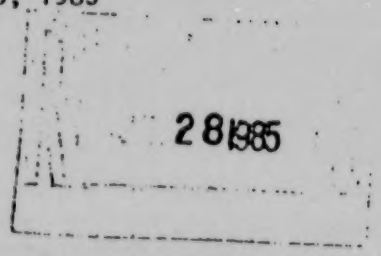
WOODCLIFF LAKE, NEW JERSEY 07675

DORCHESTER SCHOOL
MRS. H. CAROL RICCARDO, PRINCIPAL
TELEPHONE 391-6542

SUPERINTENDENT OF SCHOOLS
ADRIENNE VOGRIN, ED.D.
TELEPHONE 391-6570

WOODCLIFF SCHOOL
MR. ALBERT J. CORNEWAL, PRINCIPAL
TELEPHONE 391-6540

January 25, 1985



Mr. Anthony M. Marseglia
Superintendent of Schools
355 State Street
Hackensack, NJ 07601

Dear Tony:

I returned your survey earlier on the subject of a County High School of Science and Technology. Since we are a K-8 school district, little on the form pertained to us. However, I began to think about our 8th grade students who, if the school existed, would have to decide now about participating in the program. Since I think that the consumer should have input, I asked the middle school principal, who teaches algebra, to talk with the students about the concept and find out how many students would enroll if they had the choice now. After a thorough discussion, three students said they would apply now if the school existed now. We would have selected the same three students.

I hope that the input above contributes to the thinking of the committee. The students discussed the same issues that arise when the superintendents discuss the issue, i.e., what would be the impact on the high school district, would advance courses be offered in the home district, who would do the transportation, what would be the relationship of the county high school to the home high school?, etc. Despite all of the factors, the students thought it would be an excellent opportunity for some.

Sincerely yours,

Adrienne Vogrin, Ed.D.
Superintendent of Schools

av/em

District: WOOD RIDGE (continued)

Impact (continued):

Pulls out elite from schools, making it difficult to maintain local quality programs.

Added tuition burden for local district.

Represents a new concept of "Vo-Tech.", no doubt spurred by need for enrollments.

When program goes full-time, how well prepared will the "H.S.S.T." be to meet the other needs of these same students: humanities, Advanced Placement, English, etc., foreign languages?. What provisions will be made for their co-curricular lives?
I have seen nor heard no comment about these aspects.

District: BERGEN COUNTY VOC./TECH.

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: not answered

C. Comments: None

IV. Impact:

Since this school district has initiated the proposal for the new school, I will abstain from providing commentary on Parts, II, III, and IV of this survey.

District: LITTLE FERRY

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

Tuition would have to be low, e.g., Bergen Voc./Tech. This would give students another option for 9-12 and the district a lower tuition bill. That savings would be partially eaten up by an even less efficient enrollment at our receiving high school resulting in a tuition hike! Suggest the more difficult of vacating an existing high school to other small high schools nearby and making the empty school into the negnet high school of science and technology.

This topic has a certain fad value, and it may be expedient to exploit current interest in this area. Are we sure as professional (i.e. not political) leaders that this is the next high school program we need? I am not sure, even though technology has no greater enthusiant than myself. What about our performing and visual arts kids during an era of declining enrollment to name just one group.

District: LYNDHURST

IIA. Needs: Calculus BS and Chemistry

B. Comments: None

IIIA. Interest in Program: Yes, for a select few.

C. Comments:

It is impossible to estimate numbers at this time. However, in some areas we would not be able to send students.

IV. Impact:

If the program was designed as only a segment of the day, 2 or 3 periods, it would be well received. With declining enrollments and the positive impact of a local high school experience, Lyndhurst would not be interested in a full day program at this time. The financial issue would not be significant for the district.

District: RIDGEFIELD

IIA. Needs: None

B. Comments: None

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

This high school would accentuate the existing declining enrollment in an already high school.

District: WALLINGTON

IA. Needs: AP Physics and AP Math (beyond Cal. I.) (5 students in each)

B. Comments:

The number that would benefit is different from the number that might choose to participate.

IIIA. Interest in Program: Yes

C. Comments: None

IV. Impact:

The principles underlying the plans to implement this program are excellent for the qualified students. However, the "home school" is losing more and more of its students to the shared time schools - Satellite, COE, DE, etc. This decrease in population will result in the dropping of programs (advanced), staff members, extra curricular programs. Needless to say, the tuition and transportation will be an added burden to the local taxpayer. For the talented students the proposed program is superb; for the small district it may be catastrophic.

Bergen County Superintendents' Association
Position Statement
Bergen County Vocational/Technical Proposal
High School of Science and Technology

March 11, 1985

The Bergen County Superintendents' Association (BCSA) has reviewed the Bergen County Vocational/Technical School (BCVTS) proposal for the creation of a county High School of Science and Technology. Also reviewed were supporting BCTVS documents and research, New Jersey Labor Department Occupational Outlook statistics, County Planning Board data, a survey of Bergen County districts and informal discussions with local university professors. Based on this review, BCSA concludes that the data presently available do not substantiate an academic or occupational need for such a school in Bergen County. In addition, BCSA finds that the proposal, as presently drafted, is unclear with respect to its goals and target population.

While BCSA believes that present data do not substantiate a need, the possibility that one exists is not precluded. Therefore, the BCSA supports further study to clearly establish the need or lack thereof. Given a need is established, the various alternatives to meeting that need must be explored. Alternatives may include other than a County School of Science and Technology. All alternatives, however, must be evaluated in light of 1) learning theory, 2) financial ramifications, 3) staffing, and 4) impact on existing programs.

Although the BCSA cannot support the present proposal, we commend the initiative and leadership of Dr. Greico and the BCVTS Board of Education for their interest in assisting Bergen County districts in looking for ways to provide the best educational experience for our young people.

BEST COPY AVAILABLE

MEMORANDUM

TO: Board Members

May 10, 1985

FROM: John Grieco, Superintendent

RE: May 8th Presentation to the Freeholder Board Regarding the Technical High School

While four of the five Board members were present at the meeting, I believe it would be beneficial to summarize the meeting and comments made by the various speakers. It is my perception that the meeting went extremely well, with Freeholder Director Curran speaking strongly in our favor at the close of the meeting. The only strong opposition that was expressed came from Paul Miller representing the Bergen County Secondary Principals and Supervisors Association. This opposition was expected.

Bergen Tech's presentation included introductory comments regarding the origin and concept of the school, positive reasons for its existence, a description of the school's goals, and two demonstrations of traditional academic disciplines (mathematics, science, computer programming) integrated with technology--a neon helium laser, presented by Henry Van Kooy, and a prototype of an industrial robot, presented by Kowtha Murthy.

Also included were the following facts: Bergen County residents contribute $112 million annually to New Jersey education. While Bergen County contributes the most in taxes, it receives back the least in per pupil allocations--$493.61 per student. The state average is $1,176.88, with the highest per pupil allocation being $1,861.66. New Jersey also ranks third from the bottom among the states in services provided to gifted students.

A listing of the various speakers from the floor and a brief summary of their comments follows.

Senator Cardinale:

The Senator endorsed the program and spoke on behalf of the other New Jersey senators. He stated that the New Jersey Commission on Science and Technology was also in favor of the program. Addressing a criticism that the school is elitist, Senator Cardinale acknowledged that it was and noted that no one complains when the same type of guidelines are established for choosing cheerleaders and football team members.

Dr. Robert Balentine, President, Bergen County Superintendents Association:

The new school concept "is a significant idea, worthy of significant attention." Dr. Balentine noted that the new concept acted as the springboard for a major undertaking by the Superintendents Association--that of a broad study of the comprehensive high school, of current programs, and, in general, of what is going on in Bergen County education. Dr. Balentine commented that Bergen County has always prided itself upon excellent public schools and that the new study was in keeping with the objective of continuing to provide the best in education.

Mr. Anthony Marseglia, Superintendent, Hackensack Public Schools, and Committee Chairperson of the BCSA Subcommittee Convened to Study the Technical High School:

In explaining the position of the BCSA, Mr. Marseglia explained that it was NOT in opposition to the Bergen Tech proposal, but that evidence was not clear that need definitely exists. He commented that colleges tend to desire good writing and reasoning skills in their students, as well as a good liberal arts background. He raised the following question: "Is it educationally appropriate to immerse students in a high technology setting?"

Mr. Paul Miller, Past President, Bergen County Secondary Principals and Supervisors Association:

Speaking on behalf of the BCSPSA, Mr. Miller was strongly opposed to the new program. He stated that the existence of a school for gifted students would cause the dismantling of many AP and honors courses, not just in mathematics and science, but in the humanities areas as well. He suggested that program developers review the need, ask students if they are interested, and approach neighboring colleges who already have similar programs in existence for advanced high school students and that all schools already have programs for gifted and talented students.

Dr. Reno Zinzarella, Superintendent, Westwood Public Schools:

A Yale graduate, Dr. Zinzarella stressed the importance of a liberal education. Stating that he believed philosophically in the concept of the comprehensive high school, Dr. Zinzarella discussed the effects of the National Defense Act on schools of the post-Sputnick era.

Ms. Gina Ginsberg Riggs, Executive Director, Bergen County Gifted and Talented Child Society:

Representing the 25,000 children who have participated in programs for gifted children since 1957, Ms. Ginsberg Riggs focused on the needs of gifted children. She stated that gifted students have special needs. No one would think of putting a student with a 70 or lower IQ into a regular classroom (110 average IQ), but we do place students with IQ's of 150 and above into the regular classroom. Gifted children also have a need to learn with their intellectual peers.

Mr. Thomas Benson, Superintendent, Upper Saddle River Public Schools:

Stating that the technical school concept was an idea whose time has come, Mr. Benson suggested that we act now to implement the program, in lieu of undertaking further study.

Dr. Arlene Kessler, Aide to Senator Cardinale and a Hasbrouck Heights Educator:

Noting that the idea for such a school was discussed among the constituency of Senator Cardinale three or four years ago, Dr. Kessler suggested that such a school would enhance the county image and provide for the needs of gifted students the way we have attended to other special populations. She suggested that bright students are not sufficiently challenged and that it is the stimulation of the educational environment that produces such a challenge. Dr. Kessler also stated that the county is already losing some of its brightest students, since parents chose private and parochial schools for their sons and daughters when the local school environment is not found to provide sufficient challenge.

Mrs. Margaret Angeli, President, Teaneck Board of Education:

Speaking as both a Trustee and as a parent, Mrs. Angeli suggested that the new school would in no way injure Teaneck High School, but merely provide an alternative education for students who are gifted. In recalling the many years it took to establish education for the handicapped, Mrs. Angeli concluded her comments by saying, "let us hope it doesn't take that long for this program."

Dr. Eugene Mulcahy, Superintendent, Teaneck Public Schools:

In a very colorful rhetorical style, Dr. Mulcahy endorsed the new school proposal as visionary, as offering what is not now available in the county, as meeting the special needs of the consuming mind of the gifted child and as an appropriate project for the Voc-Tech School District since it will efficiently employ an existing resource.

Mrs. Eleanor Daut, President, BCVTS Teachers' Association

Speaking on behalf of the school's 220 day school teachers and 236 evening school teachers, Mrs. Daut offered strong support for the new project.

John Curran, Freeholder Director:

While Mr. Curran offered support for the new program and commented that specialities should be allowed to excell and do their best, he also raised the general question of overlapping and duplication of efforts in education. He suggested that to be the issue requiring study in the educational community.

Richard Mola, Freeholder:

As the last speaker Mr. Mola expressed his belief in the philosophy and concept of the comprehensive high school.

MEMORANDUM

TO: Dr. Saul Cooperman, Commissioner of Education and members of his staff
Senators Cardinale and Feldman
Angelo Di Nome, Board President, Bergen County Vocational-Technical Schools

FROM: Dr. John Grieco, Superintendent, Bergen County Vocational-Technical Schools

RE: Bergen County Educators' Reactions to the Proposed Bergen County School of Science and Technology

Bergen County Superintendents Association

In a position statement issued by this organization on March 11, 1985, it was concluded that although the available data do not substantiate an academic or occupational need for such a school, the possibility that such a need exists was not precluded.

The statement was formulated, in part, from the results of a questionnaire mailed to all Bergen County superintendents by Anthony Marseglia, Superintendent of Hackensack, who chaired an ad hoc BCSA committee charged with studying the concept and making a recommendation.

Mailed to 74 chief school administrators, the questionnaire was returned by 20 K-8 superintendents and 33 K-12 or regional superintendents. Of those responding, 16 expressed interest in the program, 3 were uncertain, and 34 were not interested.

Two months later, at a May 8 Freeholder meeting, Marseglia further explained the BCSA position by stating that the organization was not in opposition to the proposal, but that evidence was not clear that need definitely exists. Also at the May 8 meeting, Dr. Robert Balentine, BSCA President, stated that the new school concept was "a significant idea worthy of significant attention." Dr. Balentine further stated that the proposal acted as a springboard for a major BSCA undertaking which was described as a broad study of the comprehensive high school, of current programs, and, in general, of Bergen County education.

Interest in the proposed school was generated by the educational opportunity it would provide to gifted, motivated students who would be able to enjoy the stimulus and competition that intellectual peers and an accelerated, specialized curriculum could provide. One interesting comment was the parallel made between the education of gifted students and of special needs students. The education potential of students at the lower end of the intellectual spectrum is addressed with special programs and often special schools. The education of students at the higher end of the spectrum, whose learning potential is of equal deviance from the norm, is rarely offered the same special considerations. In addition, some districts perceived the school as a means of supplementing and extending their own program offerings.

The most often cited reason for opposition to the concept was the probable elimination of existing AP programs because of a "brain drain." A loss of gifted students was also seen as the potential cause of staff reduction in state aid. There was concern that the proposed curriculum would prematurely narrow the educational development of students, and that participation in the proposed school would deprive students of the time and opportunity to participate in extra-curricular activities. Other concerns expressed involved financial considerations (i.e., transportation and tuition costs); scheduling problems; the loss of student leaders and role models; and the difficulty school personnel may face keeping current with technological advances. In sum,the majority of the questionnaire respondents not interested in the idea essentially expressed the belief that their districts were already meeting student needs.

Bergen County Secondary School Principals and Supervisors Association

The membership of this association has indicated its unequivocal opposition to the creation of the proposed school.

In a December, 1984 "Position Paper," it is stated that the proposed school would: "recruit teachers from existing programs, recruit teachers from local districts, weaken local programs geared toward excellence, and 'raid' advanced placement courses." These sentiments were repeated in a letter to Dr. Grieco from the BCSSPSA dated December 17, 1984 and signed by Paul Miller, President.

Correspondence/Statements to Freeholders

To date, nine letters concerning the proposed Bergen County School of Science and Technology have been received by the Freeholders. The letters, eight of which expressed opposition to the concept, were received from the Superintendent and administrative staff of the Northern Valley Regional High School District, the Wood-Ridge Board of Education, the Principals of Ramsey, Rutherford, and Teaneck High Schools, and three private citizens. The range of concerns expressed covered the same educational, economic and social issues discussed above.

The ninth letter, which fully endorsed the new school project, was signed by former Board members of the Bergen County Vocational-Technical Schools. That letter was also printed as a letter to the editor of The Record. Over the past six months, another editorial and several news articles have appeared in support of the new school.

The May 8 Freeholder meeting was devoted to a discussion of the Bergen County School of Science and Technology. Public endorsement of the effort came from Senator Cardinale; Dr. Arlene Kessler, Aide to Senator Cardinale and a Hasbrouck Heights educator; Margaret Angeli, President of the Teaneck Board of Education; Dr. Eugene Mulcahy, Teaneck Superintendent; Thomas Benson, Upper Saddle River Superintendent; and Gina Ginsberg Riggs, Executive Director of the Bergen County Gifted Child Society. Ms. Riggs spoke on behalf of the 1500 Bergen County families with gifted children and emphasized the needs of these students to learn with their intellectual peers. Used to being "the smartest kids in the class," gifted students often fall prey to mediocrity. Ms. Riggs underscored the need for a special challenge so that these students may reach their fullest potentials in education.

ANALYSIS OF STUDENT OUTCOMES OF THE 1984-85 ADVANCED PLACEMENT EXAMINATIONS IN MATHEMATICS AND SCIENCE IN BERGEN COUNTY

Introduction
Study of AP Performance
Facts
Assumptions
Other Related Information
  Graduation Statistics
  Private School Participation Statistics
  Bergen County Participation in Westinghouse Competition
Conclusions
Advanced Placement Test Results (1984-85) for Bergen County Public Schools (Figure 1)
Bergen County (High School) Indicators of AP Exam Performance vs. Advanced Course Enrollment (Figure 2)
Distribution of Bergen County AP Test Scores by Percentage in Test Area (Figure 3)
Distribution of National AP Test Scores by Percentage in Each Test Area (Figure 4)
List of Public Schools in Bergen County
List of Advanced Course Offerings

MEMORANDUM

TO: Dr. Saul Cooperman, Commissioner of Education and
Members of His Staff
Senators Cardinale and Feldman
Angelo Di Nome, Board President, Bergen County
Vocational-Technical Schools

FROM: Dr. John Grieco, Superintendent, Bergen County
Vocational-Technical Schools

DATE: July 18, 1985

RE: Analysis of Outcomes of the 1984-85 Advanced Placement Examinations in Mathematics and Science in Bergen County

Introduction

In giving serious consideration to the implementation of the proposed Bergen County Center for Science and Technology, the question of concrete data to support the need for such a school in Bergen County surfaced on a consistent basis.

In the initial proposal document prepared in November, 1984, need was addressed relative to the general state of declining student performance nationwide in science, mathematics and technology. A review of seven major national reports on the state of American education was included. Correlations were made between the increasing demand for technical personnel--as much as 31% increase by 1987 according to a corporate study conducted in 1982 by Northwestern University--the decreasing pool of trained Americans, and the significantly increasing pool of foreign scientists and engineers. Additionally, the drop in SAT scores around the country was noted, as well as the increasing need for technical personnel in Bergen County and New Jersey industry. Further, quoting A Nation at Risk, the average achievement of high school students on most standardized tests is lower now than it was 26 years ago. In listing indicators of risk, A Nation at Risk also stated that over half of the population nationwide of gifted students do not match their tested ability with comparable achievement in school.

In an attempt to focus more closely on need in Bergen County, a survey questionnaire initiated by the Bergen County Superintendents Association was sent in January, 1985, to all public school superintendents in the County to gauge their interest in the new school and to qualify the types of advanced or AP level courses offered to gifted students around the country. Although one third of the respondents, representing roughly one third of the high school districts in the county, expressed interest in the new school, the position statement issued by the BCSA in March, 1985, concluded that available data do not substantiate need. The possibility that such a need exists, however, was not precluded. This position has been subject to interpretation: e.g., local superintendents have a responsibility to protect the interests of their districts while being mindful of their obligation to seek accelerated education for bright students; there is a philosophical questioning of the appropriateness of immersing high school students in a study of high technology.

Study of AP Performance

This analysis focuses on the number of Bergen County student participants and the actual performance of county students on advanced placement examinations in science (chemistry, biology) and mathematics-related subjects (calculus AB, BC; computer science; and physics B, C, and electricity magnetism).

A computer run showing the aggregate of student scores among the 45 public high schools in Bergen County in 1984-85 was utilized to analyze performance. This data was provided by the Educational Testing Service. Information about individual schools was not considered, since such private data cannot be released without written authorization from individual school districts.

Also utilized in this study was the Fall 1983 Report on Secondary School Course Offerings (MIS03E010) for Bergen County which included advanced and AP courses offered by each school and the number of students enrolled in each course.

The following FACTS were also important for this analysis:

1. ETS stated that the scores and participation rates for AP examinations would be significantly lower if the few large high schools in Bergen County (defined as those enrolling 250 or more in grade 11) were considered separately. Only aggregate data was available. Therefore, no attempt was made to segment the statistical data.

2. Scores on AP examinations range from 5 to 1, with 5 being the highest possible score. A score of 3 represents the generally accepted minimum score by collegiate institutions.

3. Private and parochial high schools were not included.

4. Performance of Bergen County students who attend schools outside of the county was not included.

The following ASSUMPTIONS were made for this analysis:

1. The Fall 1983 Report was used to identify AP and advanced courses and the number of student participants. Since 1984-85 data were not collected, the number of students included in the analysis reflect a 5% reduction* from actual 1983-84 figures to compensate for decreasing enrollments.

   (*In September, 1984, 106,597 students were enrolled in Bergen County Schools, a decline of 3,000 or 2.8% over the previous year. During the 1983-84 school year, 45,292 of those students were enrolled in the 45 public secondary schools in Bergen County. For this study the attrition rate of 2.8% was incremented to 5.0% to reflect the greater decrease in student enrollment in the northern sector of the county. The high school dropout rate was not considered because students who take advanced and AP courses are not typical of the dropout population.)

2. No assumption was made concerning the actual number of students who took AP examinations, since it is likely that some students took more than one examination.

Other RELATED FACTUAL INFORMATION is the following:

Graduation Statistics:

10,295 students graduated from the 45 public high schools in Bergen County in June, 1985.

Private School Participation Statistics:

...In addition to the 106,597 total students (K-12) in attendance at Bergen County public schools during 1984-85, 22,000 students (K-12) attended private or parochial schools.

...Parents of 165 students (K-12) who attend Bergen County schools paid full tuition to public schools outside their district residence in order that their children might attend those schools.(At the high school level, Tenafly and Ridgewood were the largest recipients of out-of-district students.)

Bergen County Participation in Westinghouse Competition (1984-85)

...4 of the 9 total New Jersey students who were semi-finalists were from Bergen County.

...The above figures can be compared with the State of New York in which 323 total students were semi-finalists, 100 of which came from New York City schools with 34 from the Bronx High School of Science and 28 from Stuyvesant High School.

The following CONCLUSIONS can be drawn from the analysis:

1. Although the Bergen County AP examination average compares favorably with state and national averages, the total number of Bergen County schools participating in the testing program ranged from 8% to 57.8%.
2. Of the 2,419 students enrolled in one or more advanced are AP courses (excluding Computer Science), only 765 participated in AP examinations. Therefore, two-thirds (2/3) of the County's advanced students did not take AP examinations during the 1984-85 school year.
3. Of the 815 Bergen County students taking one or more AP examinations (including Computer Science), only 71.6% achieved an acceptable score of 5, 4, or 3 while 28.4% achieved an unacceptable score of 2 or 1.
4. The number of Bergen County schools participating in the Advanced Math (BC), Physics, and Computer Science AP examinations is significantly low relative to participants in the Biology and Chemistry examinations.

ADVANCED PLACEMENT TEST RESULTS (1984-85)
FOR BERGEN COUNTY PUBLIC SCHOOLS*

SUBJECT AREA	Number of Schools	TEST SCORES 5 Number of Students	4 Number of Students	3 Number of Students	2 Number of Students	1 Number of Students	Total Number of Students	Bergen County Wtd. Average	New Jersey Wtd. Average	National Wtd. Average
Biology	20	30	35	64	63	37	229	2.82	3.23	3.25
Chemistry	15	22	23	29	10	4	88	3.55	3.25	3.02
Computer Science	9	5	10	20	8	7	50	2.96	2.94	3.08
Calculus AB	26	43	75	85	33	35	271	3.71	3.16	3.13
Calculus BC	13	35	21	28	13	7	104	3.62	3.49	3.38
Physics B	9	7	7	13	1	6	34	3.23	3.30	2.93
Physics C	4	10	8	3	3	3	27	3.7	3.67	3.44
Physics Elec/Magn	4	4	5	3	0	0	12	4.08	3.85	3.36
Sub-totals		156	184	245	131	99	815 Total			
Percent in each scoring segment		19.1	22.5	30.0	16.0	12.4				
				71.6% Accepted		28.4% Not Accepted				

Score Interpretation:
5 Extremely Well
4 Well
3 Qualified (Generally accepted minimum score)
2 Possibly Qualified
1 Not Qualified

*Data supplied by ETS: attached is the list of Bergen County Schools used in preparation of this data.

FIG.1

BERGEN COUNTY (HIGH SCHOOL) INDICATORS
OF AP EXAM PERFORMANCE VERSUS
ADVANCED COURSE ENROLLMENT

SUBJECT AREA	$\frac{\text{Total No. Taking Exam}}{\text{Total No. Taking Advanced Course}} \times 100$	$\frac{\text{Total w/5,4,3}}{\text{Total Taking Exam}} \times 100$	$\frac{\text{Total w/2,1}}{\text{Total Taking Exam}} \times 100$
Biology	$\frac{229}{890} = 25.7\%$	$\frac{129}{229} = 56.3\%$	$\frac{100}{229} = 43.7\%$
Chemistry	$\frac{88}{190} = 46.3\%$	$\frac{74}{88} = 84.1\%$	$\frac{14}{88} = 15.9\%$
Calculus (AB & BC)	$\frac{375}{1113} = 33.7\%$	$\frac{287}{375} = 76.5\%$	$\frac{88}{375} = 23.5\%$
Physics (ALL)	$\frac{73}{226} = 32.3\%$	$\frac{60}{73} = 82.2\%$	$\frac{13}{73} = 17.8\%$

1. $\frac{\text{Total Taking Exams}}{\text{Total Taking Advanced Courses}} \times 100 = 31.6\%$

CONCLUSION: 2/3 of students enrolled in advanced math and science courses do not participate in taking AP exams.

FIG.2

2. Computer Science is not included in this data. Therefore, a total of 765 students taking the examinations is obtained in lieu of 815 shown in Figure 1.

DISTRIBUTION OF BERGEN COUNTY
AP TEST SCORES BY PERCENTAGE
IN EACH TEST AREA

SUBJECT AREA	PERCENT OF PARTICIPATING SCHOOLS*	5	4	3	2	1
Biology	44.4	13.1	15.3	27.9	27.5	16.2
Chemistry	33.3	25.0	26.0	32.9	11.4	4.5
Computer Science	20.0	10.0	20.0	40.0	16.0	14.0
Calculus AB	57.8	15.8	27.6	31.4	12.3	12.9
Calculus BC	28.9	33.6	20.2	26.9	12.5	6.8
Physics B	20.0	20.5	20.5	38.3	2.9	17.8
Physics C	8.0	37.1	29.6	11.1	11.1	11.1
Physics Elec/Magn	8.0	33.3	41.7	25.0	0	0

*% of 45 public high schools
in Bergen County

FIG.3

DISTRIBUTION OF NATIONAL AP TEST SCORES
BY PERCENTAGE IN EACH TEST AREA

TEST SCORES

SUBJECT AREA	5	4	3	2	1	%3,4,5	%1,2
Biology	17.8	21.6	35.4	18.1	7.1	74.8	25.2
Chemistry	13.8	18.7	35.7	18.7	13.1	68.2	31.8
Computer Science	19.3	18.2	31.5	12.8	18.2	60.0	40.0
Calculus AB	15.2	23.1	33.5	15.8	12.3	71.9	28.1
Calculus BC	26.9	21.5	27.5	11.1	13.0	75.9	24.1
Physics B	11.9	18.8	36.7	17.4	15.2	67.4	32.6
Physics C	26.7	26.0	22.5	14.0	10.9	75.1	24.9
Physics Elec/Magn	26.7	25.4	17.3	17.8	12.7	69.5	30.5

FIG.4

LIST OF SCHOOLS IN BERGEN COUNTY

Bergenfield High School
Bogota High School
Henry P. Becton Regional High School
Cliffside Park High School
Cresskill High School
Dumont High School
Elmwood Park Memorial Jr-Sr. High School
Emerson Jr-Sr. High School
Dwight Morrow High School
Fair Lawn High School
Fort Lee High School
Garfield High School
Glen Rock Jr-Sr. High School
Hackensack High School
Hasbrouck Heights High School
Leonia High School
Lodi High School
Lyndhurst High School
Mahwah High School
Midland Park High School
New Milford High School
North Arlington High School
Northern Highlands Regional High School
Northern Valley Regional High School (Demarest) (Northern Valley Regional
Northern Valley Regional High School (Old Tappan) High School District)
Palisades Park Jr-Sr. High School
Paramus High School
Park Ridge High School
Pascack Valley High School (Pascack Valley Regional
Pascack Hills High School High School District)
Indian Hills High School (Oakland) (Ramapo-Indian Hills Regional
Ramapo High School (Franklin Lakes High School District)
Ramsey High School
Ridgefield Memorial High School
Ridgefield Park High School
Ridgewood High School
River Dell Sr. High School
Rutherford High School
Saddle Brook High School
Teaneck High School
Tenafly High School
Waldwick High School
Wallington High School
Westwood Regional High School
Wood-Ridge High School

1983-84 COURSE OFFERINGS

TOWN	COURSE #	COURSE NAME	GRADE CLASS	SIZE
Bergenfield	1460	Creative Writing	11 & 12	20
	1960	Analytical Geometry and Calculus	11 & 12	26
	2212	Advanced Biology	12	12
	2244	Advanced Chemistry	12	8
	2243	Advanced Physics	12	10
Bogota	1961	Calculus with Analytic Geometry	12	18
	2212	Advanced Biology	10-11-12	22
Becton Regional	1460	Creative Writing	10-11-12	16
	1960	Analytical Geometry and Calculus	12	15
Cliffside Park	1460	Creative writing	11 & 12	6
	2212	Advanced Biology	12	30
	1961	Calculus with Analytic Geometry	12	21
Creskill	1460	Creative Writing	11 & 12	6
	1960	Analytical Geometry and Calculus	11 & 12	42
	1990	Differential and Integral Calculus	12	21
	2212	Advanced Biology	11 & 12	22
Dumont	1460	Creative Writing	11 & 12	14
	1961	Calculus with Analytic Geometry	11 & 12	40
Elmwood Park	1961	Calculus with Analytic Geometry	12	11
	2212	Advanced Biology	11 & 12	28
Emerson	1460	Creative Writing	11 & 12	19
	1960	Analytical Geometry and Calculus	11 & 12	46
	1961	Calculus with Analytic Geometry	12	17
	1970	Probability and Statistics	11 & 12	6
	2212	Advanced Biology	12	13
	2244	Advanced Chemistry	12	6
Englewood	2212	Advanced Biology	11 & 12	16
	1960	Analytical Geometry and Calculus	11 & 12	25
	1970	Probability and Statistics	11 & 12	23
	1417	Advanced Placement English	12	39
Fairlawn	1417	Advanced Placement English	11 & 12	9
	1460	Creative Writing	11 & 12	15
	1960	Analytical Geometry and Calculus	11	73
	1970	Probability and Statistics	11 & 12	43
	2212	Adcanced Biology	10-11-12	87
	2290	(other)		
		A.P. Chemistry	11 & 12	21
		A.P. Biology	11 & 12	22
		A.P. Physics	12	13

1983-84 COURSE OFFERINGS

TOWN	COURSE #	COURSE NAME	GRADE CLASS	SIZE
Fort Lee	1417	Advanced Placement English	12	17
	1961	Calculus with Analytic Geometry	12	24
	2212	Advanced Biology	9 & 10	44
Garfield	1460	Creative Writing	9	10
	1960	Analytical Geometry and Calculus	10	13
	1961	Calculus with Analytic Geometry	12	13
	2212	Advanced Biology	10 & 11	18
Glen Rock	1460	Creative Writing	9-10-11-12	21
	2212	Advanced Biology	12	31
Hackensack	1417	Advanced Placement English	11 & 12	26
	1460	Creative Writing	11 & 12	14
	2212	Advanced Biology	12	8
	2243	Advanced Physics	11 & 12	19
	2244	Advanced Chemistry	12	22
Hasbrouck Heights	1961	Calculus with Analytic Geometry	12	5
	2244	Advanced Chemistry	12	6
Le[illegible]a	1417	Advanced Placement English	12	41
	1961	Calculus with Analytic Geometry	11 & 12	19
	2212	Advanced Biology	12	17
Lodi	1460	Creative Writing	11 & 12	18
	1961	Calculus with Analytic Geometry	12	10
	2212	Advanced Biology	11 & 12	6
	2244	Advanced Chemistry	12	5
Lyndhurst				
Mahwah	1460	Creative Writing	12	15
	1490	English Honors	10	20
	1490	English Honors	11	23
	1961	Calculus with Analytic Geometry	12	14
	1970	Probability and Statistics	11 & 12	17
	2212	Advanced Biology	11 & 12	6
Midland Park	1417	Advanced Placement English	12	17
	1961	Calculus with Analytic Geometry	12	30
	2212	Advanced Biology	12	21
New Milford	1960	Analytical Geometry and Calculus	12	14
	2212	Advanced Biology	12	14
N[illegible] Arlington	1961	Calculus with Analytic Geometry	12	16

1983-84 COURSE OFFERINGS

TOWN	COURSE #	COURSE NAME	GRADE CLASS	SIZE
North Highland Regional	1460	Creative Writing	11 & 12	164
	1490	English Honors	10-11-12	124
	1990	A.P. Calculus	12	41
	2290	A.P. Physics	12	54
		A.P. Biology	11 & 12	77
Northern Valley	2212	Advanced Biology	12	12
	1417	Advanced Placement English	12	36
	1490	Creative Writing	11 & 12	20
	1961	Calculus with Analytic Geometry	12	30
	2212	Advanced Biology	12	19
Palisade Park	1417	Advanced Placement English	12	7
	1961	Calculus with Analytic Geometry	9-10-11-12	86
	2222	Bacteriology	11 & 12	25
Paramus	2212	Advanced Biology	9 10	91
	1417	Advanced Placement English	12	38
	2244	Advanced Chemistry	10 & 11	30
	1460	Creative Writing	11 & 12	67
	2290	A.P. Physics	12	16
	1990	A.P. Pyhsics	9 & 10	56
	1990	A.P. Math	11 & 12	15
	2290	A.P. Chemistry	11 & 12	13
	2290	A.P. Biology	11 & 12	54
Park Ridge	1417	Advanced Placement English	12	23
	1460	Creative Writing	12	55
	1961	Calculus with Analytic Geometry	12	29
	2244	Advanced Chemistry	11 & 12	10
Pascack Hills	1417	Advanced Placement English	12	46
	1460	Creative Writing	11 & 12	59
	1961	Calculus with Analytic Geometry	12	51
	2212	Advanced Biology	10-11-12	60
	2225	Advanced Earth Science	9	42
	2244	Advanced Chemistry	11 & 12	36
Pascack Valley	1417	Advanced Placement English	12	28
	1460	Creative Writing	11 & 12	95
	1960	Analytical Geometry and Calculus	12	34
	1961	Calculus with Analytic Geometry	12	23
	2212	Advanced Biology	12	18
	2244	Advanced Chemistry	12	14

1983-84 COURSE OFFERINGS

TOWN	COURSE #	COURSE NAME	GRADE CLASS	SIZE
Ramapo Indian Hill	1960	Analytical Geometry and Calculus	12	25
	1970	Probability and Statistics	11 & 12	169
	2212	Advanced Biology	11 & 12	62
	2243	Advanced Physics	12	13
	2244	Advanced Chemistry	12	20
Ramapo High School	1960	Analytical Geometry and Calculus	12	38
	1970	Probability and Statistics	11 & 12	200
	2212	Advanced Biology	11 & 12	42
	2243	Advanced Physics	12	31
	2244	Advanced Chemistry	12	18
Ramsey	1417	Advanced Placement English	12	39
	1460	Creative Writing	11 & 12	102
	1961	Calculus with Analytic Geometry	12	21
	1970	Probability and Statistics	12	18
	2212	Advanced Biology	11 & 12	43
	2243	Advanced Physics	12	16
Ridgefield	1417	Advanced Placement English	12	14
	1970	Probability and Statistics	11 & 12	35
	1990	Geometry Honors	10 & 11	23
Ridgefield Park	1417	Advanced Placement English	12	25
	1960	Analytical Geometry and Calculus	12	34
	2212	Advanced Biology	10	48
Ridgewood	1460	Creative Writing	9-10-11-12	45
	1417	Advanced Placement English	12	18
	1961	Calculus with Analytic Geometry	11 & 12	22
	1970	Probability and Statistics	12	37
River Dell Regional	1417	Advanced Placement English	12	56
	1460	Creative Writing	9-10-11-12	71
	1961	Calculus with Analytic Geometry	12	34
	2212	Advanced Biology	12	43
Rutherford	1417	Advanced Placement English	11 & 12	24
	1460	Creative Writing	10-11-12	24
	1961	Calculus with Analytic Geometry	11 & 12	43
	2212	Advanced Biology	12	12
Saddle Brook				

1983-84 COURSE OFFERINGS

TOWN	COURSE #	COURSE NAME	GRADE CLASS	SIZE
Teaneck	1417	Advanced Placement English	12	52
	1460	Creative Writing	11 & 12	7
	1960	Analytical Geometry and Calculus	11 & 12	326
	2212	Advanced Biology	12	19
	2243	Advanced Physics	12	10
	2244	Advanced Chemistry	12	15
Tenafly	1417	Advanced Placement English	12	21
	1961	Calculus with Analytic Geometry	12	47
	1970	Probability and Statistics	11 & 12	70
Waldwick	1460	Creative Writing	12	15
	1961	Calculus with Analytic Geometry	11 & 12	39
	1970	Probability and Statistics	11 & 12	19
	2212	Advanced Biology	11 & 12	20
	2243	Advanced Physics	12	13
	2244	Advanced Chemistry	11 & 12	6
Wallington	1961	Calculus with Analytic Geometry	12	8
	2212	Advanced Biology	12	27
[redacted]ood	1460	Creative Writing	11 & 12	45
	1961	Calculus with Analytic Geometry	12	23
	1970	Probability and Statistics	11 & 12	12
	2212	Advanced Biology	12	26
Wood Ridge	1460	Creative Writing	12	43

TABLE OF CONTENTS

ARTICLE TITLE	DATE	SOURCE	PAGE NO.
High-tech High School - Luxury or Necessity	6/16/83	The Record	1
Vo-Tech Budget Includes 10% Boost in District Fees	1/18/85	Herald News	2
Elite High School Stirs Up a Storm	1/19/85	Dispatch	3
Disunity on High-Tech High School Plan	1/20/85	The Record	4-a &
High Tech School Plan Stirs Bergen Opposition	1/20/85	Herald News	5
Brightest Kids Get Cheated	1/27/85	The Record	6
An Idea Worth Trying	1/28/85	The Record	7
Bergen Maps High-brow, High-tech Vo-tech	2/10/85	Star Ledger	8
For a High-tech Education	2/10/85	The Record	9
High-tech Plan O.K. is Expected by Vo-Tech Unit	2/13/85	Herald News	10
Robot Sways School Board	2/19/85	The Record	11
Board Continues its Plans for High-tech High School	2/19/85	Herald News	12
Auto Electronics if Unique Program at Bergen Tech	2/20/85	Town News (Paramus)	13
Inquiring Reporter "How do you feel about a high technology high school being built in Bergen County?"	3/13/85	Suburban News	14
Bergen Vo-tech Board gives Grieco tenure, $6,000 raise	3/23/85	Herald News	15
Decision Due on Vo-tech Satellite	3/25/85	The Record	16
Lautenberg Renews Push for School Computers	3/26/85	Star Ledger	17
Lautenberg Seeks Funds to Purchase School Computers	3/26/85	Herald News	18
Vo-Tech for 'Best' Students Runs into Teacher Opposition	3/85	Herald News	19
Vote Seeks More Study of High-tech High School	3/28/85	The Record	20
OK Awaited by Vo-tech on Loan Aid	4/2/85	Herald-News	21

Table of Contents (cont.)

ARTICLE TITLE	DATE	SOURCE	PAGE NO.
The Best High-school Education	4/16/85	The Record	22
High-tech High School Debated	5/9/85	The Record	23
Supt. Mulchahy Speaks Out for High-Tech.Ed.	5/9/85	Herald-News	24
Vo-tech Chief Wants to Start Gifted School	8/31/85	Herald-News	25
Bergen High-tech High School Put on Hold	9/1/85	The Record	26
Teaching Ethics to go with the Technology	7/18/85	The Record	27
Educating Gifted Students	9/12/85	The Record	28

BEST COPY AVAILABLE

The Record

Close-up

THURSDAY, JUNE 16, 1983

B 3

Staff Illustration by William Hogan

High-tech high school

Luxury or necessity?

By Lila Lockaley
Staff Writer

State Sen. Gerald S. Cardinale dreams of turning a vacant school building into a prestigious high-technology high school for students throughout Bergen County.

Inside the school, the Republican pictures bright, highly motivated juniors and seniors studying advanced subjects — such as chemical analysis, number theory, astrophysics, and computer programming — that are too specialized or expensive for their home schools to offer.

He envisions New Jersey businesses and industries helping to design courses, lending experts to teach classes, and donating state-of-the-art equipment, possibly in exchange for tax credits.

And he has only to look across the Hudson River to the Bronx School of Science or the New York School of Performing Arts — the inspiration for the movie "Fame" — to know that his dream is possible.

But some Bergen County school administrators point out that public schools here have neither the population nor the problems of the New York City system — problems like poor student performance, few advanced courses, widespread public dissatisfaction, and the exodus of students to private schools. A number of obstacles, they say, stand between Cardinale's dream and reality.

Some Bergen County school superintendents say they would be reluctant to give up any students, let alone their highest achievers. Besides, they say, many districts already provide science courses equal to those at the Bronx School of Science.

Others say that specialized schools may work well within urban school districts, but that the administrators of 75 districts in this county will not be able to agree on a single plan.

"I can see the big schools that want to keep up their record of merit scholarships saying, 'You can't take my best students away from me. You're going to drag down our reputation,'" says Gina Ginsberg-Riggs, executive director of the Gifted Child Society, a nonprofit parents group based in Oakland.

Cardinale — a former Demarest Board of Education president who is seeking reelection to the state Senate this year — acknowledges that his dream may be transformed once superintendents become involved. But he says that state Education Commissioner Saul Cooperman has expressed interest in the idea of specialized schools.

A spokesman for the state Department of Education confirms Cooperman's general support for a study of specialized high schools, and adds that a special commission on science and technology appointed by Governor Kean is looking at specialized high schools as one way to strengthen math, science, and technology programs in the state.

Some educators in the office of the Bergen County superintendent of schools also believe that the concept has merit. They plan to conduct a survey of school administrators in the fall to determine what kinds of advanced science and math programs are currently offered, whether programs have been dropped because of declining enrollment, and how school administrators would feel about a specialized school.

"I personally think there is a need," says Leonard Willens, a program coordinator in the county schools office. While some districts in Bergen County offer an outstanding science education, Willens says, others provide little beyond introductory biology, chemistry, and physics.

"I would have no objection to some of these high schools having exactly what the kids need right there," says Willens. "But we're not sure that can happen with the way enrollments and resources are going today."

Because Cardinale's proposal is speculative, no information is available about the cost of developing and running such a school, the eligibility requirements for students, the curriculum, or the structure of the school day.

See HIGH-TECH, Page B-10

PAGE B-1

"We're just getting our feet wet," Willens says, adding that no money is currently available to launch a full-fledged investigation. "It looks like it is going to be a pretty slow process."

Specialized high schools that draw students on the basis of skills and interests rather than residence have become increasingly popular as a solution to declining enrollment, rising costs, and inequities in public schools.

State Sen. Frank X. Graves Jr., for example, is sponsoring legislation for school building aid that earmarks money for a proposed arts high school in Paterson, where he is mayor.

In Montclair, where court-ordered desegregation forced changes in neighborhood schools, parents can choose their children's elementary and middle school based on the special emphasis each offers — whether it be programs in science and technology, in the arts, or for the gifted and talented. In addition, Montclair High School offers a special school-within-a-school for the performing arts.

In New York City, where specialized high schools have been in existence for about 75 years, a [illegible] science high school opened last September at the former Benjamin Franklin High School on the Franklin D. Roosevelt Drive. A center for humanities is expected to open this fall in a closed school on the lower West Side.

Some educators believe the trend will accelerate because of the recent report by the National Commission on Excellence in Education, which criticized a "rising tide of mediocrity" in public schools, and lambasted science and math programs in particular.

Frank Smith, a professor of school administration at Teachers College, Columbia University, and a former Ridgewood school trustee, says that instead of opening a new school exclusively for "gifted" students, he would like to see existing high schools develop specialities and compete for students on a countywide basis.

"There are truly gifted kids who need special education," he says. "There are also a lot of snobs who do not want their child in contact with average children."

But Arlene Kessler, Cardinale's legislative aide for education, points out that a selective math-science school might encourage the parents of private-school students to reconsider public education.

"Many p[illegible]roneously believe student[illegible]ceive a superior education in a private school," says Ms. Kessler, who is also head of pupil personnel services for the Hasbrouck Heights schools.

"Part of that reason may be that the private schools have the option of rejecting some students. The mere factor of selectivity gives them an aura of superiority. Having the public schools offering an equal option through a 'magnet' school that has specific requirements may provide these parents with a very attractive option."

For some small districts, the reluctance to endorse a special school stems not from ego but from practical considerations.

"Most of us are facing declining enrollment," says Dr. I. L. Roy Stern, the Creskill school superintendent. "This would simply compound the problem."

Cardinale's staff argues that since students might attend the proposed school part time, districts would not lose enrollment. Superintendents [illegible] students who would attend such a school, even on a part-time basis, probably could not remain active in the home schools' football teams or debate clubs, thus depriving the rest of the students.

Even superintendents who applaud the proposal say that the state must do more to ensure that gifted and talented students receive equal opportunities in the public schools.

"He is taking the concept of regionalization and refining it," says Palisades Park Superintendent George Fasciano. "I think it is a step in the right direction. The fact that you are dealing with the talented and gifted will make everybody listen."

Superintendent Thomas Benson of Upper Saddle River says he generally supports Cardinale's high school idea, but he thinks more should be done for bright students in their neighborhood schools.

"I think it is a very positive idea, but I don't want it to be considered the cure," Benson says. "The only hesitation I have is that I wish all of our schools were geared to providing the best possible education for the best students.

"If in fact, we made education for the gifted important enough that we built a special school for them, then districts would have to work harder so that their kids would get into that program."

Herald News
LOCAL NEWS
BERGEN EDITION — January 18, 1985

Vo-tech budget includes 10% boost in district fees

By Kathleen McDermott
Herald-News Staff Writer

Local school districts could pay 10 percent more to send their students to county vocational schools under the proposed $15.2 million budget of the Bergen County Vocational-Technical Board of Education.

The budget calls for $10.2 million in county funds, an $800,000 increase over 1984 and more than $400,000 over the amount the county had planned to provide in its preliminary 1985 budget.

The requests were made at the latest in a series of meetings between the county Board of Freeholders and the heads of key county departments. The freeholders are hoping to hold most departments to last year's spending levels to limit tax increases.

"This is the most clearly presented budget we've ever had from the vocational school," County Administrator Richard L. Nelson said after the meeting, "but in dollar amounts it's the worst I've ever seen."

Schools Superintendent John Grieco said the increase could be attributed primarily to changes in funding procedures for district programs. Funding for the now-defunct Comprehensive Employment and Training Act programs had been allocated on a per-program basis, he said, allowing the district to use CETA-funded facilities and equipment for other programs at no charge.

With the end of the CETA program, however, funding is provided by the county's Private Industry Council on a per-student basis. Grieco estimated the additional costs because of the change at $300,000.

In addition, Grieco said, changes in the funding system for the county's Emergency Medical Services, Juvenile Detention Center, Technical Training Center and Career Development Center for Women have increased the district's budget by $450,000.

While the board's proposed budget is 11 percent higher than the year's totals, Grieco said that without those funding changes, the increase would have been only 5.8 percent because of program consolidation. Teachers contracts alone call for 9 percent salary increases, he said. The average salary for district teachers is $27,000.

"Teachers are the mainstay of what education is all about," Angelo DiNome, president of the school board, told the freeholders. "And this board has tried to dedicate as many dollars to teachers as possible."

Local districts now pay $710 a year for full-time students, $567 for shared-time students and $2,007 for special needs students attending county vocational schools. Actual per-student costs are estimated at $4,800.

The freeholders will continue their budget meetings Saturday, when they are scheduled to meet with Sheriff William D. McDowell and representatives of Bergen Community College and the Youth Services Department.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

THE DISPATCH (Bergen Edition)
January 19, 1985

Elite high school stirs up a storm

By MARITES CHICHOCO
Staff Writer

A proposal to establish a highly specialized high school in Bergen County has turned into a tug of war over who will get the best and the brightest students.

The Bergen County School of Science and Technology is described by its proponents as "an extension of every public and private high school in Bergen County" that will provide much-needed intensive training for students with high aptitude.

But local school districts view the school as one that poses a threat to their own programs by siphoning off the smartest students and most talented teachers.

The school is proposed for Hackensack on Route 4 near the existing Vo-Tech facility. The Bergen County Board of Freeholders recently approved a $6 million bond issue for the project, which has drawn public support from four state senators: Matthew Feldman, D-Teaneck; Paul J. Contillo, D-Paramus; Gerald Cardinale, R-Cresskill; and Garrett W. Hagedorn, R-Midland Park.

A bill providing start-up funds of $600,000 for the school is now being considered by the state Legislature.

John Grieco, superintendent of Vo-Tech and the school's main

See ELITE, Back Page

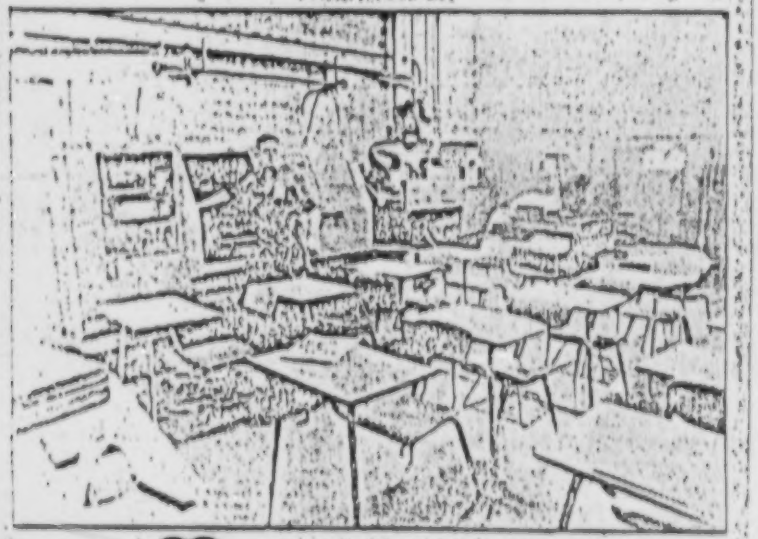


Photo by Don Smith

HAROLD [redacted]TERSON, a machine shop instructor, yesterday points out computerized lathe at Vocational-

ELITE

Continued from Page 1

supporter, said that a school specializing in science and technology has been a long time coming.

New York City has three such high schools, while New Jersey has none, he said. Bergen County, because of its "affluence and high academic standing," is the ideal place for the facility, he said.

The curriculum — which would offer areas of specialization in mechanical and electronic technology, computer science technology, chemistry and biology, mathematics and physics, and biotechnology — will prepare students more adequately for college and for careers in science and technology, he said.

The need for this type of training is not fully being met by local school districts, primarily because of budgetary constraints or lack of sufficient enrollment levels, he said.

The start-up date, which is subject to passage of the funding bill, is school year 1986-87. During this initial year, the school will offer only freshman courses.

Forty-five elementary school graduates from throughout the county will be chosen competitively. Aptitude exams will be given to interested eighth graders this next school year. Through the exam, the cream of the student crop will be skimmed for enrollment.

However, [redacted] districts fear that to give u[redacted]e high-powered students such a facility wants to

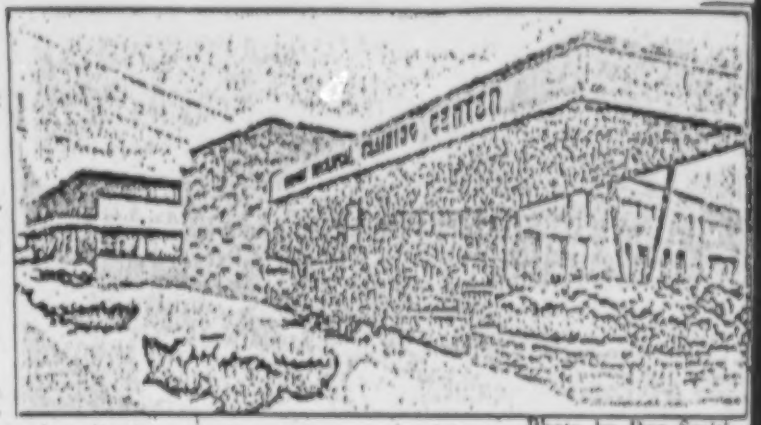


Photo by Don Smith

The existing Bergen Vo-Tech facility on Hackensack Avenue in Hackensack.

drain.

"It is a threat to programs at the local level," said Paul A. Miller, president of the Bergen County Secondary School Principals and Supervisors Association who is assistant principal of Northern Valley Regional High School in Demarest.

Miller said students are already being given a "solid foundation" at the local level. For the gifted and talented, advanced courses are being offered, along with the opportunity to earn college credits through advanced placement.

If a select group needs more intensive training, those courses should be offered at the five existing satellite schools being run by Vo-Tech, where students can spend part of their day and still stay within their local district, he said.

Educators in the larger high schools, such as Ridgewood and Fort Lee, agree that such a school would pose a threat to their systems, but to a lesser degree.

sets: They are people who make a school more well known. They contribute (to the general student population) just by their presence, pulling others up," said Robert Honsinger, principal of Ridgewood High School.

Honsinger said Ridgewood High, one of the largest in the county, will not be affected too heavily by the establishment of such a school. He said his school currently boasts four rooms devoted to computer studies, and added that officials from Vo-Tech who visited Ridgewood High were "impressed by our resources."

Alan Sugarman, superintendent of schools in Fort Lee, said the tradition of the school and the pride it instills in its students will keep them from leaving.

Cooperation from the local school districts is imperative if the program [redacted]ucceed, Grieco said. A study [redacted]ently being conducted to d[redacted]mine what impact the proposed school would have on

North Jersey RECORD

1/20/85

Disunity on high-tech high school plan

By Peter Marks
Staff Writer

Bergen County officials have proposed the creation of a countywide high school of science and technology, modeled after New York's Bronx High School of Science, for Bergen's brightest math and science students.

The proposal has won tentative approval from the county vocational-technical school board, which is sponsoring the project. But it is opposed by Bergen's high school principals and supervisors, who fear the school will steal their most talented students and damage local math and science programs.

Despite the opposition, county vocational-education officials are seeking ways to finance the school, which would be housed in new or renovated buildings on the Bergen County Vocational-Technical High School campus in Hackensack. The officials estimate it would cost $3 million to build the school and $600,000 to run during the first year.

"We're creating a new type of school," said John Grieco, superintendent of the vo-tech district. "Our proposal is for a high-tech school for science and technology — an integrated high school program with sciences, mathematics, and the computer."

Part-time program at first

If Grieco's plan receives the vo-tech board's final approval and the Bergen County freeholders agree to dedicate about $3 million from a $6-million bond issue for the project, Bergen would become the first county in the state to operate such a school. Officials in Mercer County have discussed a similar proposal, but have yet to take action.

Plans call for the school to open in September 1986 and to enroll about 300 students. At the outset, students would continue to take most academic courses in their local high schools and travel to the science and technology high school for advanced courses in such areas as electrical technology and physics.

In the following years, the school would enroll both full- and part-time students.

Admission policies would be similar to those for elite New York City public schools such as Manhattan's Stuyvesant High School and the Bronx High School of Science. Bergen County students seeking admission would take an entrance examination, submit transcripts and teacher recommendations, and be interviewed by the school's staff.

Gordon Ascher, New Jersey's assistant commissioner for vocational education, said the state has given Bergen County $35,000 to use for plans for the high school. He added, however, that county officials will have to decide whether the school, which would draw heavily on gifted science and math students, should be run by the vo-tech board.

"Vocational education has to keep pace with the changing labor market, which means we have to become more technology-oriented, which I'm very much in favor of," Ascher said. "But the question arises, in which setting should the training be provided?"

See DISUNITY, Page A-55

BEST COPY AVAILABLE

Disunity on high-tech high school plan

FROM PAGE A-49

To the Bergen County Secondary School Principals and Supervisors Association — which has passed a resolution opposing the school's creation — the proper setting is the local high school.

"A solid foundation is already being provided in those subjects by Bergen County's high schools at the present time," said Paul A. Miller, the association's president. He is assistant principal of Northern Valley Regional High School in Demarest.

"And if you're going to take away a number of students from the high schools, then Bergen's high schools are in trouble. We are facing declining enrollments as it is. We don't need a duplicate program to take more kids away from our high schools."

Opposition

James Delaney, principal of Teaneck High School and chairman of the committee that drafted the association's position, said advanced-placement programs in math and the sciences would be jeopardized at some of Bergen's 46 public high schools if even a few students were to leave for the county school. Enrollment in advanced-placement programs is small, and some districts find it financially difficult to maintain classes with fewer than 10 students.

Vo-tech officials counter that the science and technology high school would offer classes not available anywhere else in the county. The four-year high school, they said, will offer a core curriculum in math, computers, and the sciences, and six areas of scientific specialization.

The six areas are mechanical technology, electronic technology, computer science technology, chemistry and biology, mathematics and physics, and biotechnology. Grieco said that students would be working at the level of college sophomores by the time they were graduated from the program.

Murthy Kowtha, technical research specialist for the vo-tech district, said the science and technology high school will also give students a deeper understanding of technical subjects. In computer science, students would not only learn about software and programming, but would also take courses in computer hardware and learn about electronics, he said.

In addition, Grieco and other vo-tech officials have met with representatives of Stevens Institute of Technology to discuss the development of cooperative programs between the proposed school and the institute, based in Hoboken.

The concept of a countywide school for gifted students has been suggested before. Two years ago, state Sen. Gerald Cardinale, R-Demarest, proposed that such a high school be established.

Now, Cardinale and three other state senators from Bergen County — Matthew Feldman, D-Teaneck, Paul Contillo, D-Paramus, and Garrett W. Hagedorn, R-Midland Park — are sponsoring legislation to appropriate $200,000 for the first year of operation of the vo-tech board's technology school.

Financing for the project remains uncertain. Bergen County Freeholder-Director John Curran said he thinks the idea for the school is "fantastic" but added he was unaware the vo-tech board wanted between $2.7 million and $3 million from the freeholders for the project.

The freeholders last year approved a $6-million bond issue to refurbish vo-tech facilities. In the first phase, $2.5 million is being used to renovate laboratories. Grieco said he wants some of the remaining bond money for a new or renovated building for the proposed high school.

Robert Balentine, Park Ridge's superintendent and president of the Bergen County Superintendents Association, said a committee of chief administrators is studying the vo-tech proposal. But while Balentine said he has not made up his mind about the plan, other Bergen superintendents, who asked not to be named, said the school administrators are deeply divided on the issue.

The county vo-tech board is scheduled to vote Feb. 11 on the plans for staffing and other school operations.

Grieco said he believes one reason some educators are opposed to the school is the perception that the vo-tech school is only capable of handling students who are less academically motivated.

"We're not only vocational; we're technical," Grieco said. "And technical these days means high-tech."

Learning to log on, for life

The Associated Press

NEW YORK — A new city high school scheduled to open in September aims at producing electronically literate graduates — a generation that will log on to a word processor as casually as its grandparents licked a pencil tip.

The school, in Brooklyn, will be called the High School of Telecommunications Arts and Technology.

"Essentially, it will be a technology-infusion high school, where the use of computers and electronic media arts will be an integral part of studies across the curriculum," said Gloria Rakovic, the project director.

"Computers will be used in the social studies class, a video studio will be used in the science classes, a radio studio in remedial reading," she said.

The idea will be to produce students who can use the equipment as tools, not to turn out engineers or electronics whizzes.

"They are going to know applications of the equipment, what can be done, what are the possibilities," said Miss Rakovic.

BEST COPY BEST COPY AVAILABLE

(4-b)

'High-tech' school plan stirs Bergen opposition

By Kathleen McDermott
Herald-News Staff Writer

"High-tech" isn't just a buzzword to Dr. John Grieco, superintendent of the Bergen County vocational-technical schools.

To Grieco, and to members of the vo-tech board, "high-tech" is the combination of theoretical knowledge and practical experience that will be needed by scientists and engineers tomorrow — but that is too expensive for local high schools to teach today.

The solution, Grieco believes, is the Bergen County School of Science and Technology, a proposed secondary school for the county's top science-oriented students. First proposed last September, the school would admit advanced grammar school graduates based on test scores, IQ levels and past work.

Those students, in addition to a core curriculum, would take courses in one of six specialized areas that would include practical application to technological problems. Ideally, students would graduate four years later, able to do the work of a college sophomore.

"If we teach advanced calculus," Grieco said, "we'll teach it so that it becomes operational, such as in the use of a videoscope."

The vo-tech board will begin soliciting opinions from local schools superintendents on the proposal Monday. But the response they get may not be favorable.

"It's a needless duplication of services we're already providing, and it would tend to be disruptive to the curriculum and staffing of our own programs," says Thomas F. King, principal of Hasbrouck Heights High School and vice president of the Bergen County Secondary School Principals and Supervisors Association. "I'm not sure there's a demand there, or if this is the most economical way of doing it."

The association has informed Grieco of its opposition and, in a position paper prepared by its executive committee, said the proposal "would recruit students from existing programs, recruit teachers from local districts, weaken local programs geared toward excellence and raid advanced-placement courses." The association has urged its members to make their opposition known to district superintendents.

Grieco, however, insists the proposed school would supplement, not compete with, science programs in individual districts.

"The point of the school is to offer unique programs that cannot be offered by local districts," he says. "It will take science and technology and integrate them into each other, and it will involve a lot of hands-on experience. Our belief is that we have attempted to project what skills and knowledge scientists and engineers will need in 1990 and the 21st century."

The board has proposed opening the school for 45 freshmen by September 1986. The school would be located at the Bergen County Vocational-Technical School in Hackensack, either in existing buildings or a new structure, with first-year costs estimated at $600,000. The county Board of Freeholders have approved a $3.2 million bond for renovation of existing vo-tech facilities, and a bill now in the state Senate's education committee would also provide operating funds for the first five years and would appropriate $200,000 for the initial year.

King, however, says there is "practically universal opposition" to the plan among secondary school teachers.

Rather than establishing one high school for gifted students, the association believes the answer lies in the regionalizing programs at selected high schools throughout the county.

"I think in the development of this program, maybe we should have been involved, if a need was felt," he said.

Grieco, however, says he's confident the school will gain support once its purpose is clarified.

"You no longer become a theoretical physicist and dream these things," he said. "You have to go into other areas, so you have to train people differently. The idea is to take these students and lead them along paths where their own creative instincts will emerge, where they won't just be lectured."

And, he said, with its high per-capita income and above-average education levels, Bergen County would be the ideal setting for such a school.

"Bergen County is the 10th richest political entity in the country," he said. "If there's any place that would be ideal for this, it's here. Parents here must be asking, 'Why isn't there a place in this county where we can send our children for this kind of education?'

BEST COPY AVAILABLE

THE RECORD - January 27, 1985 "OPINION"

Brightest kids get cheated

By Joan Beck
Chicago Tribune

Start with this fact: Education for gifted children is a farce.

Look at its most logical implication: The nation is wasting a valuable asset by letting its brightest youngsters drift along in schools that aren't geared to develop them. As a result, both students and nation are failing disastrously to realize their bright potential.

Then what? It's time to invest in the gifted the same amount of public attention and resources that go to other youngsters who need learning opportunities different from lock-step, grade-level instruction.

One problem is that it's difficult to talk about the gifted in a country founded on the ideal of equality — where excellence is often confused with elitism and regarded with suspicion as undemocratic.

There isn't even agreement on what to call bright kids or how to identify them. Most educators resist labeling youngsters, even to group them for special programs. And labels for the gifted can easily be flipped to seem denigrating to other students, even if no one means that those who are not "bright" are therefore "dull" or "untalented."

Researchers at the Sid W. Richardson Foundation, who are just completing the first nationwide study of educational opportunities for bright youngsters, have decided to use "able learners" to describe them (despite criticism that the term could be twisted to imply that other children are "unable" to learn). The Richardson study intends the term to include not only "gifted" and "talented" students but a much larger group who also need more challenging schooling.

The researchers did find dozens of outstanding special programs for able learners — some of them good enough to make a lifelong difference for students selected to participate.

But most of the 1,147 school districts surveyed had no special programs for the gifted or, at best, a hodgepodge of intermittent opportunities with little continuity or coordination. A majority of the programs failed to deliver what they seemed to promise for bright youngsters.

For example, more than half the schools claimed to provide "enrichment" for gifted students, but researchers found only a fraction of the programs actually deserved the name.

As a result of its four-year study, the Richardson Foundation will make several recommendations in the report it will publish.

It will advocate that schools try to identify able students with every kind of special ability as early as possible during the school years, using a wide range of talent-discovery techniques and "casting as broad a net as possible."

To finesse the sticky issue of labeling the gifted (or able), the study will urge schools to adopt a continuous-progress kind of advancement for all students. Youngsters who can learn faster and in greater depth than others — in one subject or most — should be able to do so.

The report envisions a kind of pyramid of learning opportunities with a base of strong programs for a large number of able students and a diminishing number of special classes for the most highly talented.

With careful planning, this kind of comprehensive, continuing program need not be expensive, according to those involved in the Richardson study. By building on current courses, shifting resources, and involving a variety of community facilities, costs could be kept to only a few dollars a student. Pilot programs based on the Richardson findings will begin soon in four Texas school districts and one in Oklahoma.

None of the ideas in the Richardson study is startlingly new. What matters is that the report will call fresh attention to how inadequately this nation educates its brightest young people, how much of their enormous vitality and abilities are neglected and wasted, how easily this could be remedied, and how cost-effective it would be.

This country can no longer afford to waste its finest human resources, to keep on assuming that bright youngsters can find adequate learning opportunities on their own. With programs in place for the handicapped, learning disabled, bilingual, and emotionally disturbed, surely it's time to give the talented and gifted a chance to learn at an optimal rate and in an optimal way, too.

The Sunday Record
Friend of the People It Serves
Established June 5, 1895

Published Sunday through Friday by
Bergen Record Corporation,
A Macromedia company
at 150 River St., Hackensack, N.J. 07602
(201) 646-4000
and
1350 Route 23, Wayne, N.J. 07470
(201) 628-0100

MICHAEL H. HEATH, President
CHARLES A. AGEMIAN, Treasurer
RICHARD E. LEWIS, Vice-Pres. Production
ALVIN MILLER, Vice-President Personnel
HERBERT E. NELSON, Corporate Secretary
FRANK J. SAVINO, Vice-Pres. Marketing

BEST COPY AVAILABLE

EDITORIAL - "THE RECORD" - January 28,1985

An idea worth trying

What can be done for high-school students who spend their free time writing complicated computer programs and their school days studying basic algebra?

Bergen County officials think they have an answer — a centralized science and technology high school, modeled after New York's Bronx High School of Science, for students with extraordinary talents in the sciences.

Initially, under the plan proposed by the county's vocational-technical school board, these students would take most of their academic courses in their local high schools and travel to the Bergen County Vocational-Technical High School in Hackensack for advanced classes in subjects like electrical engineering and computer science.

After a couple of years, the special school would begin offering a full curriculum and serve both full- and part-time students. Advocates of the plan say the school would need about $3 million to start and about $600,000 a year to function.

The idea has its opponents, particularly principals who fear that their high schools would suffer a brain drain and a lowering of academic standards. But we think it deserves a try.

New Jersey is one of the nation's high-tech capitals — many firms here, including several major computer-products companies, employ top-of-the-line scientists. Yet the state has no science high school to help prepare our kids to take some of those jobs. And most local high schools don't have the the staff or the facilities to provide advanced science education. Potential scientists end up spending valuable time in classes that provide them with little more than boredom.

We don't see why removing these students for special classes would necessarily lower academic standards, as the principals contend. But the best way to study the pros and cons of this idea is to see it in action. Why not start the centralized science program part-time, with no commitment to go full-time, and see how things work out? Then, with a track record to consider, we can resume the debate on the merits.

BEST COPY AVAILABLE

THE STAR-LEDGER - Sunday, February 10, 1985

Bergen maps high-brow, high-tech vo-tech

By MICHAEL ROZANSKY

Some see it as the future in vocational education. Others consider it a threat to advanced education in local school districts.

Call it the high-tech vo-tech, a vocational school where high school students concentrate not on metal shop or automobiles but on robots and laser optics as applications of math, computer science, physics and electronics.

Such a school is in the works in Bergen County, where it would be the first of its kind in the state. If all runs on schedule, it should be ready for the 1986-87 school year.

"Industry is changing and many vocational schools either don't know in which direction to change or cannot afford to change and make a mistake," said Gordon Ascher, the state's assistant commissioner for vocational education. "Trying it is a good idea."

He added, "What used to be called vocational education has to have a broader definition now."

The plan has also opened a debate on whether the school will siphon the finest students from local school districts.

"This is something rather unique," said John Grieco, superintendent of the vocational-technical schools of Bergen County, who said the program is geared toward "very bright students." He said local school districts were unable to provide the type of "integrated approach" his school would.

"Many of the high schools provide what they say they're going to provide," countered Paul Miller, the president of the Bergen County Secondary School Principals and Supervisors Association. "We can't see another expensive high school being equipped to do the same thing we're already doing."

Bergen County's plan calls for a school with entrance exams modeled after the prestigious Bronx High School of Science. Proposed courses range from biology, chemistry and math to genetics, software engineering and computer-aided design.

The school would be in five buildings on the vo-tech campus in Hackensack. Grieco said it must be in separate facilities to help shake the image of the vo-tech student as a "second-class citizen, (one of) those who couldn't make it in the academic arena."

Students initially would attend only for half-days, returning to their home districts for non-science courses. Eventually the school would run full-time with 300-350 students, Grieco said, and would teach humanities, as well as ethics as they apply to technology.

Above all, proponents said, the school would try to move from theory to practice, showing, say, how robotics and computer-aided drafting could come from the study of math, physics and electronics.

"The theme is a traditional 'hands-on,'" said Grieco. "In the high-tech world, we come back to hands-on. I have a master's in theoretical physics. When I finished that master's, I couldn't tell you how to solder two wires together."

One of the reasons other schools haven't attempted this is the cost, Ascher said. He cited one firm's estimate that an electronics lab would cost several hundred thousand dollars to set up. And in five years, he said, "everything in the lab would have to be replaced because it'll be outdated."

Another consideration is the fears of local school officials.

Miller, the assistant principal at Northern Valley Regional High School in Demarest, lauded the idea of high-tech schooling. But he said students would be better off leaving early from their regular high schools to take supplemental courses at nearby colleges.

"I don't want to lose one advanced student from my high school because I need them. We need them to make the school work," he said.

Ascher said the "worst fears" of local school officials will never be realized because the best students will remain in local schools for college-preparatory courses.

"Bright but disenchanted students, very good with computers at home but not getting good grades in math or anything else, will need this kind of environment to bring out their best," he said.

BEST COPY AVAILABLE

For a high-tech education

Editor, The Record:

Your editorial (Jan. 28) on the desirability of a science and technology high school touches on a long-existent need in this state, apparently never perceived by the educational authorities from whom we expect such insight.

This lack, I feel certain, has some bearing on the annual exodus of college-seeking high-school seniors from New Jersey. Isn't it ironic that our state, a leader in research and development and one of our nation's high-tech capitals, does not have the most obvious educational facility to encourage the training of the very employees responsible for this distinction?

A technically oriented high school would target its programs to produce graduates with good, solid training, whose acceptance by the science and engineering schools would be most likely. This would undoubtedly encourage New Jersey's colleges to offer technical training.

The long history of New York City schools like Stuyvesant High School, Brooklyn Technical High School, and Bronx High School of Science have produced many eminent scientists and engineers. As an alumnus of one of these — more than 50 years ago — and with three sons in technical fields, I heartily endorse the value of early scientific training.

My experience teaching science to college beginners of both sexes long ago made me aware of the woeful lack of adequate training of these students in basic science and math.

Your idea is well worth trying, perhaps starting in an existing urban high school. It would entail gradually introducing technical courses stressing science and mathematics over a period of years, and offering the curricula necessary for college training in engineering, computer science, and the natural sciences.

There are enough competent, trained professionals in New Jersey to form an effective faculty, given the proper incentive.

Job opportunities in these fields are well publicized and need no defense, even for those graduates of the technical high school who do not go on to college.

As for the fear of lowering academic standards in other high schools, I think it is unwarranted to assume that all bright students would enroll for a technical education. Diversion into the technical fields would therefore not constitute a drain.

FRANCIS A. DOMINO
Clifton

BEST COPY AVAILABLE

High-tech plan OK is expected by vo-tech unit

By Kathleen McDermott
Herald-News Staff Writer

The Bergen County Vocational-Technical Board of Education is expected to approve establishment of a science and technical high school for advanced students at its Feb. 18 meeting.

Board member Angelo DiNome said Tuesday the proposed school represents a "great opportunity" to offer high school students courses and laboratory facilities unavailable at the local level. He said, however, approval by the four-member board Monday does not mean plans will move forward without advice from local school officials, many of whom have already voiced opposition.

"There will be a number of caveats," he said. "I would not consider this a monumental step, quite frankly. We're saying, 'This is a draft, it's a good idea, and let's go forward.' It's nothing more than that, and I wouldn't want any group to think we were passing them by. We're moving from the concept to the strategy stage."

In a position paper issued in December, the executive committee of the Bergen County Secondary School Principals and Supervisors Association opposed the high-tech school concept, claiming the school would "recruit students from existing programs, recruit teachers from local districts, weaken local programs geared toward excellence and raid advanced placement courses."

The committee also urged principals to make their objections known to local superintendents.

Robert Balentine, president of the Bergen County Superintendents Association, said Tuesday association members were scheduled to meet with John Grieco, county vo-tech superintendent, to discuss the results of a survey conducted among the county's local superintendents.

But that meeting was cancelled because of inclement weather, he said, and has not been rescheduled. He would not release results of the survey, but said he was "amazed" the vo-tech board would vote on the proposal without the survey results.

Proposed last fall, the school would open in September 1986 for 45 freshmen at existing vo-tech facilities in Hackensack. Partial funding would come under proposed legislation designating the school an "experimental model school program" and making it eligible for $200,000 in its first year.

DiNome said he was confident the school will eventually gain support among local educational leaders.

"It's a great opportunity, and when it's properly heard by all parties it will be supported," he said. "What we really want to do is what's best for students with high aptitudes in math and science. It's an old cliche that the future of America is in our students, but it's true."

BEST COPY AVAILABLE

Robot sways school board

By Joan Verdon
Staff Writer

A robot with a Spanish accent persuaded the county vocational-technical school board last night to vote in favor of a proposed high-technology school for Bergen County's top math and science students.

The board, however, must win financing from the state legislature and overcome strong opposition from local superintendents and principals before its dream school becomes a reality.

Instead of asking the board to approve his recommendation for the school, John Grieco, superintendent of Vocational-Technical High School, let a robot named Hero do the talking. Hero, put together by vocational students and programmed by teacher George Gonzalez (who shared his Spanish accent with the machine), won over the board with an array of tricks, including a rendition of "Jingle Bells."

Would deplete enrollment

The board, however, probably will need more than a talking robot to persuade local superintendents to back its plan. Local school administrators already have objected that such a school would steal their most talented science students and further deplete their declining enrollments.

The Bergen County Secondary School Principals and Supervisors Association already has passed a resolution opposing creation of such a school, stating that advanced science and math programs already are being offered in local high schools.

Superintendents have indicated their displeasure in a survey taken

See ROBOT, Page D-2

Robot successfully lobbies for school

FROM PAGE D-1

by vo-tech officials. Grieco would not release the survey comments, but said a number of the superintendents appear concerned about declining enrollment.

"Their greatest problem right now is declining enrollment, so anything that smacks of taking away enrollment looks bad," he said. The superintendents are expected to take a position on the proposal at their March or April meeting.

Vo-tech board President Angelo DiNome said the board won't be swayed by opposition if it thinks the superintendents are more concerned about declining enrollment than what is best for the students.

The board's vote last night clears the way for Grieco to come up with a specific plan for how the school would be financed, staffed, and organized. The board is hoping to have the school open by the fall of 1986.

Board members said such a school is needed to guide students into the 21st Century. "I've read that 55 percent of the manufacturers in three years will be going into computer-assisted manufacturing, computer-assisted robotics, computer-assisted design. So it's not an idle kind of direction to be going in. It's something I think that strikes at the heart of the economy and the nation," said board member Ann Merserean.

Grieco said the board already has $2.6 million available to build the school, thanks to a $6-million bond issue to upgrade the vocational facilities approved by the freeholders last year. He said creating a high-technology school is a permissible use of the bond money, even though the school had not been proposed when the bond issue was approved.

Four state senators from Bergen County — Gerald Cardinale, R-Demarest; Paul Contillo, D-Paramus; Matthew Feldman, D-Teaneck; and Garrett W. Hagedorn, R-Midland Park — are sponsoring legislation to provide money for the school's first four years of operation.

The state estimates that such a school would cost between $5,000 and $6,000 per student to operate, Grieco said.

The school would be on the Bergen County Vocational-Technical High School campus in Hackensack. Plans call for the school to enroll 300 students when full.

Proposed admissions policies would be similar to competitive schools such as the Bronx High School of Science, with students required to take an entrance examination. Each student would be provided with a computer, Grieco said.

Students would specialize in one of the following six areas: mechanical technology, electronic technology, computer science technology, physics, chemistry, or mathematics.

Grieco said the board will consider three options for the school — a shared time program in which students would spend a half day at their local high school and a half day at the high-technology school, a full-time program for students, and a program in which students in schools near Hackensack could enroll in single courses.

BEST COPY AVAILABLE

Board continues its plans for high-tech high school

By Bob Abrams
The Herald-News

New Jersey's next Thomas Alva Edison may come from Bergen County, not Menlo Park, if the county's Vocational-Technical Board of Education has anything to do with it.

Monday night, the board formally approved a resolution to continue its plans for the establishment of a high-technology high school.

The proposed secondary school, to be called the Bergen County School of Science and Technology, would offer such majors as electronics and mechanical technology, computer science, physics and chemistry. Bio-technology also has been proposed as a major.

The school would take science and technology, integrate them, and apply them to the technologies of today and tomorrow, according to Superintendent John Grieco.

This lesson in applied technology was made clear by the board when it demonstrated a robot before the regular meeting began.

"Fifty-Five percent of manufacturers in three years will go into computer-assisted manufacturing," said board member Ann Mersereau. "This facility will take the lead to provide people for that area."

Five buildings on the grounds of the vocational-technical high school in Hackensack would be used for the school, Grieco said. The buildings would be refurbished to provide laboratory and classroom space as part of a $3.2 million bond issue approved by freeholders for the renovation of existing vo-tech facilities.

A bill now in the Senate Education Committee would also provide operating funds for the project.

Grieco said the school would admit 75 students during each of its first four years of operation. He estimated it would cost $5,000 to $6,000 a year for each of the 300 students the school eventually would enroll.

Grieco, who has been charged by the board with developing plans to open the school in the 1986-87 school year, told the board it must make a decision to implement plans to open the school by December 1985 if that deadline is to be met.

Opposition to the plan comes from the Bergen County Secondary School Principals and Supervisors Association. A position paper issued earlier said the school "would recruit students from existing programs, recruit teachers from local districts, weaken local programs geared toward excellence and raid our advanced placement courses."

In response to these arguments, Grieco said the purpose of the school is to offer programs that cannot be offered by local districts. He also said there are enough teachers within the system to open the school.

A large number of the best students would come from districts throughout the county, not from any one particular district, said board president Angelo DiNome.

COPY AVAILABLE

"Computer command controls," "closed loop systems" and "open loop systems" are among the terminology common to current automotive technology courses taught at the Bergen County Vocational-Technical Schools.

Synonomous with automotive electronics, these terms form some of the new basics in automotive maintenance and diagnostic procedures. The county voc-tech school offers the only comprehensive program in automotive electronics in Northern New Jersey.

On-going through the adult division at present is an intensive, 12-hour seminar to train instructors and industry personnel in the new electronic systems. "The seminar," explained George Monaco and Thomas Kanzler, program co-directors, "provides a synthesis of the new material which has been integrated into the regular program of instruction.

Designed for qualified automotive diagnosticians with some technical background, this program provides up-to-date electronics instructions for the motor vehicle in a brief, but comprehensive seminar format."

"We've had to completely revamp our automotive instruction," stated Monaco, "because the changes in the automotive field over the past three years have been greater than the previous 30 years."

"The nuts and bolts mechanic," added Kanzler, "is a job with a past history. We have to train technicians with a fairly sophisticated level of understanding of computer systems and electronics."

This learning comes in an integrated format which allows students to learn the computer and essential electronic principles through their real world applications in automotive vehicles.

Voc-tech instructors worked during the summer and extra hours this fall to put the finishing touches on the program. Support from the school district administration, some grant money, equipment and vehicle donations from local industry, and a lot of time from dedicated teachers have allowed the new program to emerge.

Donations of 1984 vehicles to boost the automotive electronics training include a GMC Van from Beyer Bros. in Fairview, a Buick Skylark from Stillman & Hoag in Englewood, and a Dodge Truck from Bigelow Motors in Belleville.

Kanzler predicts that the district is just beginning in its changing approach to automotive instruction. Recent articles in such magazines as Popular Science and Scientific American, as well as trade journals, predict that changes in automotive computer concepts will continue through the end of the 1980's.

School Superintendent John Grieco views this effort in the automotive area as essential to providing education that is meaningful for students. "In a vocational-technical school, we cannot afford to be comfortable with what has been traditional. We have to be willing to undertake drastic program revisions such as those accomplished in the automotive area so that our training has meaning for students in the workplace."

BEST COPY AVAILABLE

Voc-Tech NEWS
PARAMUS • RIVER EDGE • ORADELL • NEW MILFORD
P.O. BOX 267) Paramus, N.J. 07652 261-1404
No. 27 February 20, 1985 PRICE 10¢

3/13/85
Suburban Life

Inquiring Reporter

BY JEAN MURTAGH

How do you feel about a high technology high school being built in Bergen County?

Vicki Schuessler, Wyckoff

"It would allow students with a higher intelligence to advance more, than in a regular public high school."

Patrick Reilly, Ridgewood

"You gotta like it. It will open a door for a lot of kids and give them a chance to advance in college with a firm scientific background."

Kelly Curtis, Mahwah

"I feel it would be a great idea because it would give an advantage and opportunity for those students with the ability for advanced education."

Stevie Soifer, Oakland

"It would be a good idea. There's a performing arts high school in N.Y.C. for people who excel in the arts, so why not a high tech school for people who excel in the sciences."

Jeffrey Bender, Paramus

"I think a high tech high school would be a great idea for kids that are into computers."

BEST COPY AVAILABLE

HERALD NEWS March 23, 1985

Bergen vo-tech board gives Grieco tenure, $6,000 raise

By Kathleen McDermott
Herald-News Staff Writer

The Bergen County vocational-technical school board has granted tenure and a $6,000 raise to Dr. John Grieco, superintendent of the district.

Grieco had been business administrator of the district before being named superintendent in April 1984, replacing Stephen J. Fong, who retired in 1983.

Board Secretary Connie J. Giacomarro said Grieco was hired at $60,000 with the understanding he would receive the tenure and raise pending results of an extensive evaluation by the board. Grieco's contract called for the board to make its decision by October. His new salary is effective through April 1986.

Board President Angelo DiNome said the board, in its evaluation, found Grieco's performance "outstanding" and that the superintendent's reputation for educational innovation is "recognized throughout the state." Grieco was chosen by a search committee from a field of 96 candidates, he said.

One of Grieco's better-known proposals is the establishment of a high-tech school for outstanding high school science students based on The Bronx High School of Science in New York. The proposal has stirred protest from some educators on the local level, who say such a school would rob local districts of their most talented students and teachers.

The proposal has been endorsed by the vo-tech board and a meeting with the freeholders has been scheduled for next month.

Admitting his tendency to be candid on educational issues, Grieco called the vo-tech board's action "a vote of confidence" and said tenure provides "more encouragement to speak out on what one believes."

"No superintendent in the state was evaluated as extensively as I was," he said, adding that there are "approximately 10 to 15 things in the hopper" for the district in the months ahead.

He also said the state Board of Education will grant accreditation in May or June to the Bergen County Vocational-Technical High School for post-secondary education, making students eligible for government education loans in 29 programs.

COPY AVAILABLE

The Record
3/25/85

Decision due on vo-tech satellite

By Joan Verdon
Staff Writer

The Bergen County vocational school board is preparing to decide the fate of its northeast satellite school in Norwood — a school that has been in limbo almost from the day it opened 14 years ago.

During the coming school year, the board must decide whether to build a new expensive new facility or close the school and opt for a different method of providing vocational courses for students in the 19 towns in Northeast Bergen.

One of the proposals under consideration is a suggestion that the board "decentralize" its northeast program by offering vocational courses in local high schools, rather than an operating a separate satellite school.

Students who attend the vocational school spend half their day at the satellite school and half at their local high school for academic courses.

The northeast vocational satellite has been housed in a converted factory in an industrial park in Norwood since it opened in 1971. David Riscinti of River Vale, a member of the school's first graduating class, remembers being told that the converted factory "was a temporary location for two to three years — and 14 years later that school is still there."

Riscinti is a member of a citizen group that has been lobbying the board for a new northeast satellite vocational school for three years. "The sooner something is settled, the better it will be for the program," Riscinti said.

The vocational board voted last month to keep the northeast satellite open until June 1986, said John Grieco, superintendent of vocational programs. Next year, the board will look at the satellite's enrollment and decide its fate, he said.

This year, 206 students are enrolled in the school, about half the number of students it can accommodate, said satellite Principal Bonnie Marmor.

The school has had an enrollment problem almost as long as it has been in existence, and supporters say the problem stems from the school's treatment as a poor stepchild. Other satellite schools boast more impressive facilities and more course offerings than the northeast satellite.

John J. Howarth, superintendent of the Northern Valley Regional District, said the substandard school makes it difficult to attract students and that the lack of students makes it difficult to justify a new building. "It's like a Catch-22" he said.

Superintendent Grieco said the vocational board is trying to improve enrollment in all of its schools this year. Next week it will mail information about the vocational schools to the parents of 19,000 seventh- and eighth-grade students in Bergen County.

The vocational district also has a new policy of allowing vocational students to invite friends and relatives to spend a day in the schools to

See TRUSTEES, Page B-2

Trustees to decide vo-tech's fate

FROM PAGE B-1

see what they are like. The district also is trying to reach parents with career days and open houses.

The state has classified the northeast facility as a substandard building, in part because it is not accessible to handicapped students. The vocational district must submit a plan for phasing out the facility, but it is not under a specific deadline for vacating the building, vocational officials said.

Last week, Grieco met with superintendents from the districts that send students to the northeast satellite to discuss the future of the school. One suggestion made at the meeting was that the vocational board investigate the possibility of offering vocational courses in several high schools in the area. Students from adjacent towns would travel to those high schools for vocational programs rather than to a separate satellite school.

Grieco said the plan would utilize unused space in those high schools.

Dr. Robert Balentine, president of the Bergen County Superintendents Association and superintendent of schools in Park Ridge — one of the northeast districts — said it was evident from statistics presented at last week's meeting that enrollment at the school had dropped by a greater percentage than the overall student population. He attributed the decline to "a move back toward the academic approach. A larger percentage of the students now are college-bound," he said.

If the northeast satellite is closed and not replaced with another type of program, students from the 19 towns it served would attend another satellite school in Paramus. For some of the towns involved, such as Washington Township, the Paramus facility would be more convenient. But officials from towns in the Northern Valley say such a change could significantly increase their students' traveling time.

BEST COPY AVAILABLE

STAR LEDGER - Tuesday - March 26, 1985

Lautenberg renews push for school computers

By MICHAEL ROZANSKY

After touring the computer classrooms of a Bergen County technical school, U.S. Sen. Frank Lautenberg (D-N.J.) announced yesterday he was reintroducing a bill to help fund computer education.

The measure would provide about $150 million over a year to aid poorer districts in buying computer equipment. It requires schools to plan computer curricula and have faculty ready, so the systems won't go to waste after they are purchased.

"The computer, in my view, is more a pencil than a book. It ought to be a tool for learning," said Lautenberg, the former chairman and co-founder of Automated Data Processing in Clifton, the data-processing firm.

"It would be pitiful if we grow a generation of children who don't have the benefits of modern technology," he said, adding, "This is basic in the information era in which we now live."

The bill, he said, would particularly help less affluent urban districts. A similar bill, which called for $600 million over four years, died in Congress last year.

Lautenberg toured classes at the Bergen County Vocational-Technical School in Hackensack, where computers abounded. As he walked into a computer-aided design class, the electronic, droning voice of a robot greeted him.

He turned to a student working at a terminal on the blueprint of a machine tool and asked about the value of computers in design.

"Everybody in the trade has those and is changing over to computers for drafting," replied 18-year-old Charles Safarian of Ridgefield Park.

In a computer-aided manufacturing class, students programmed computers hooked up to a lathe and a drill to make metal parts. Students in remedial classes played the educational equivalent of video games, shooting down attacking multiplication problems with the correct answers. Others practiced word or data processing or computer-aided printing.

Bergen County's four vocational schools have about 200 terminals attached to personal computers or mainframe computers. School officials have begun an effort to become the first county in the state with a high-technology vo-tech school specializing in science and applied-computer courses.

Lautenberg endorsed the effort, saying there was no reason New Jersey and the county shouldn't be leaders in such programs, and adding that the school and faculty were "impressive."

The senator, meanwhile, seemed to have left a good impression as he walked through the classes and introduced himself with self-deprecating good humor. "I'm one of your senators," he announced to anyone in earshot in the print shop. "Ever hear of Bill Bradley? Well, I'm the other one."

BEST COPY AVAILABLE

Lautenberg seeks funds to purchase school computers

By Kathleen McDermott
Herald-News Staff Writer

A few weeks before he plans to officially introduce it in Washington, Sen. Frank R. Lautenberg, D-N.J., has unveiled in Hackensack a bill that would provide $150 million to secondary schools throughout the United States for the purchase of computers.

The senator toured the computer facilities at Bergen County Vocational and Technical High School Monday. He spoke with students and teachers and introduced himself as "your senator, but not Bill Bradley," a reference to his fellow New Jersey Democrat.

Lautenberg said the purpose of his bill is twofold: To provide students in poorer districts the same access to computer training as those in wealthier school systems, and to ensure that such funds are spent properly.

Lautenberg's bill would require schools receiving the funds to prove they were not "just blankly applying hardware" without the proper courses and instructors, said Jim McQueeny, the senator's press secretary.

"The dumping of computer hardware on schools is counterproductive," McQueeny said, "and this bill would require a tailored agenda on how the schools plan to spend the money."

The bill will be the second introduced by Lautenberg to provide such funding. Similar legislation, which would have provided $600 million over four years, died in the Senate last December. Lautenberg said the bill might stand a better chance of passing if it can be "cycled in" one year at a time.

While watching students at work in the school's computerized print shop, Lautenberg said he could remember gathering metal slugs from galley trays when he took a Letterpress printing course in high school — an indication of the computer's impact on all industries.

The former chairman of American Data Processing Company, Lautenberg admitted during the tour that his expertise lies in the business — not the technical — end of computers. But he said recent technological advances have made clear the need to begin computer education on the secondary school level.

"We have to make sure we're not leaving out the students who have the ability to learn," Lautenberg said. He also called the county vo-tech board's controversial proposal for a high-tech school for advanced science students "a darn good one."

Computers are "more a pencil than a book," the senator said after the tour.

Herald-News Photo by Jack Ander

Sen. Frank Lautenberg, D-N.J., looks over the shoulder of student Charles Safarin of Ridgefield Park as he works on a computer terminal at Bergen County Vocational and Technical High School in Hackensack Monday.

BEST COPY AVAILABLE

3/85 Herald News

Vo-tech for 'best' students runs into teacher opposition

Richard Mola

The proposed school "would pilfer the individual schools and hurt the entire educational system."

By Kathleen McDermott
Herald-News Staff Writer

What's right for students in The Bronx may not be right for students in Bergen County, according to some educators. Therefore, the board of freeholders will look for answers to that conundrum next month when it plans to meet with local superintendents and principals on a controversial plan to establish a high-tech secondary school for the county's best students.

The school, which received preliminary approval Feb. 18 from the county vocational and technical board of education, would open in September 1986 to 45 freshmen who meet entrance requirements and would be modeled on the highly regarded Bronx High School of Science in New York. The school would be funded at both the state and county levels.

Dr. John Grieco, county vo-tech superintendent, has said the school would combine hands-on laboratory experience and advanced courses too expensive for most local districts to provide.

But the Bergen County Secondary School Principals and Supervisors Association has opposed the program as a "raid" on the best students and teachers in local districts, a fear that was echoed Wednesday by Freeholder Richard Mola, a guidance counselor at Ridgefield Park High School.

Mola said the proposed school "would pilfer the individual schools and hurt the entire educational system." He proposed instead that advanced students be sent to area colleges for advanced science courses, eliminating the cost of establishing a new school, while taking advantage of the high number of colleges in the area.

Even if such a school is needed, it won't succeed without the cooperation of local superintendents and principals, said Freeholder Allen Sklar, who is an administrator in the New York City public school system.

"If they don't come up with a consensus, it's bound to fail," Sklar said. "We've had the conflict about education for the gifted for many, many years, and these problems always seem to erupt."

The freeholders hope to invite Grieco, members of the vo-tech board, a representative of the state Department of Higher Education and several local principals and supervisors to the still unscheduled meeting.

Freeholder Arthur Jones, however, warned that a failure to establish adequate facilities for talented students could, indirectly, "promote mediocrity" in the name of local control.

"New York City provides every opportunity for the exceptional child to excel," he said. "We have got to reach out to these exceptional youngsters, because they are our leaders."

BEST COPY AVAILABLE

Vote seeks more study of high-tech high school

By Jonn Vordon
Staff Writer

The Bergen County Superintendents' Association yesterday took a cautiously worded stand against a proposed high-technology high school for the county's top math and science students.

The association yesterday approved a resolution stating that more research should be done to determine if there is a need for such a school. The Bergen County Vocational-Technical School Board voted last month to develop plans for a high-tech school.

"The resolution is not saying that there is not a need, but rather that the need has not been demonstrated," said Anthony Marseglia, superintendent of Hackensack schools, who headed the committee that developed the resolution.

He said the committee felt more research should be done on the need for a high-tech high school, and the best way to provide such a school, before any decision is made to build a high-tech school on the grounds of the county Vocational-Technical High School in Hackensack.

The county vocational board has proposed that such a school be built using $2.6 million the board has available thanks to a bond issue last year. Four state senators from Bergen County are sponsoring legislation to provide funds for the school's operation.

While the superintendents commended the vocational board and vocational Superintendent John Grieco for raising the issue of a high-tech high school, they said the vocational board's proposal is "unclear with respect to its goals and target population."

The meeting was attended by almost the entire membership of more than 70 superintendents, Marseglia said. Five or six of the superintendents present voted against the resolution.

Vocational officials said they were not surprised by the resolution, but said they hope to be able to work with the superintendents to come up with an acceptable plan for a high-technology school. "We have a good idea, and we'd like to use the strength of some very good educators in the county to work on that idea," said Angelo DiNome, president of the vocational board.

BEST COPY

OK awaited by vo-tech on loan aid

By Kathleen McDermott
Herald-News Staff Writer

State approval of post-secondary education at the Bergen County Vocational-Technical High School could be completed by June, making students enrolled in an estimated 29 programs eligible for federal education loans.

Richard Harnack of the state division of vocational education said the board is waiting for the vo-tech district's response to a report prepared last month by a 35-member state evaluation team. Once the state receives the district's comments, he said, the plan will go to the state Department of Education for final approval.

"It's always a gutsy move to invite outsiders in to evaluate you," Harnack said. "You're laying everything out on the line."

'It's always a gutsy move to invite outsiders in to evaluate you. You're laying everything out on the line.'

— Richard Harnack, state education official

John Grieco, vo-tech superintendent, said Monday he expects the approval process to be completed by June, with student loans available as early as September or October. State aid for education is offered only to those 18 or younger, he said, and post-secondary approval will allow the school's adult population to receive financial aid.

"This is definitely a thrust in a whole new direction," Grieco said. "What this school district is doing is enlarging the range of students who can come to it."

The vo-tech school's adult population has grown from 5,000 to 13,000 in recent years, he said, and "we're capitalizing on what is obviously already out there."

Grieco said the programs will include most of the courses now offered at the school, including air conditioning, refrigeration, electronics, computer-aided design and computer-aided manufacturing. The state approval would be good for five years, he said, and is a harbinger of changes in vocational education designed to meet the needs of increasing segments of the population.

Of New Jersey's 20 county-run vocational schools, seven have requested and received approval for post-secondary education.

Letters

Record April 16, 1985

The best high-school education

Editor, The Record:

On Feb. 28, 1972, The Record published a letter of mine wherein I questioned the concept of the satellite school. I believed then, as I do now, that all students whether or not they attend college require a comprehensive high-school education. It is impossible for them to have this if they are in satellite programs.

Students enrolled in vocational satellite schools are perforce shortchanged in their academic and general education courses, principally because of the time wasted traveling between their local high school and the satellite school. It is also difficult for them to participate in extracurricular activities — a very important part of a high-school student's life.

There is no reason why strong vocational courses cannot be included in the regular high-school curriculum. Training for very specialized trades could be offered to those who desire them as a postgraduate fifth-year program.

An idea recently put forth to have those students gifted in science participate in segregated satellite programs that would specialize in science is equally faulty. These students would also be deprived of a strong background in the humanities.

Students should have the opportunity to elect from a wide variety of subjects, to share their experiences and strengths with each other, to participate in extracurricular activities, and to explore many interests — all within the setting of a truly comprehensive high school.

VIRGINIA G. CIOCCO
Suffern, N.Y.

Ms. Ciocco is former assistant principal and supervisor of business education in the Pascack Valley Regional High School District.

A lawyer explains

Editor, The Record:

There is an old adage that the truth never fully catches up with the effects of a journalistic slur. It has been given new vitality by The Record's treatment of me in its series of articles published in December 1983, and its article of March 7 headed "Bergen to end fringe benefits for 12 lawyers."

In its original articles in 1983, The Record reporter, while acknowledging statements by county officials that I performed substantial legal services for the county from 1981 to 1983 while a part-time employee, nevertheless indiscriminately lumped me together with other part-time employees who apparently had not performed such services.

That series was followed by an investigation by the Bergen County prosecutor which culminated in his report of March 6 in which he said: "It should be pointed out, however, that with respect to one [Leon Savetsky] of the four employees, it would appear that commensurate services were performed in exchange for the salary and health benefits received."

The report goes on to state that "he was unfairly categorized with the other three individuals. His circumstances were factually distinct from theirs; nevertheless he was summarily discharged."

In its article of March 7, The Record states that of the four employees who were the subject of the investigation, only I could demonstrate that I performed services for the county during the period involved and that the prosecutor was critical of the freeholders for firing me without first trying to determine if I belonged in the same category with the three others.

But it then goes on to state that the prosecutor did not address the issue of whether I was legally entitled to receive health benefits. The statute governing such entitlement permits benefits to "appointive or elective officers or full-time employees."

As I originally stated to your reporter prior to the publication of the December 1983 articles, I was appointed as labor attorney for the county under a Civil Service statute dealing with unclassified employees, which includes freeholders and department heads as well as county legal officers and various other officials. Despite the language of the statute, however, the reporter still doggedly insists on sticking to her own interpretation of the law and inaccurately repeating that health benefits are available only to employees who work 20 hours per week.

In addition, The Record articles in 1983 were emblazoned across the front page of the A section, while the ultimate exoneration of me was buried deep on an inside page of the North Jersey section in a story whose headline did not even mention the prosecutor's report.

LEON B. SAVETSKY
Fort Lee

High-tech high school debated

Joan Verdon
Writer

A proposed high-technology high school was described by supporters as a training ground for future Nobel Prize winners and criticized by opponents as a costly mistake in a two-hour hearing before the Bergen County Board of Freeholders yesterday.

The freeholders listened to the pros and cons but did not take action on the proposal by the Bergen County Vocational-Technical School Board. The vo-tech board has asked the freeholders to pass a resolution supporting the board's efforts to develop a special high school for the county's best math and science students.

No action was taken yesterday because three freeholders were on vacation and could not attend the hearing, Freeholder-Director John F. Curran said.

The vo-tech board and vo-tech Superintendent John Grieco have proposed that a county high school of science and technology be established on the grounds of the Vocational-Technical High School in Hackensack.

Grieco has proposed that the school be built using bond money available to the vo-tech board, and its operations funded through state appropriations, at least in the beginning.

"We have no programs in Bergen County and in New Jersey which speak clearly to the technically oriented, gifted student," Grieco said. His comments were echoed by the superintendents from Teaneck and Upper Saddle River and the executive director of the Gifted Child Society.

As part of his effort to win freeholder support, Grieco came to yesterday's meeting with two demonstrations of the types of classroom projects that would be common at a high-technology school — a machine that uses laser beams to measure the speed of light and a small robot hooked up to a computer "brain."

The robot was supposed to demonstrate how its computer brain could distinguish between different-sized blocks, but it slowed down and stopped soon after the demonstration began.

Opponents of the proposed high-technology school said the freeholders shouldn't be impressed with a robot, even if it had worked perfectly.

"The type of demonstration you saw I'm sure you will find in many advanced physics classes," already being offered in high schools, Hackensack Superintendent Anthony Marseglia said.

Marseglia headed a superintendents' committee that recommended that more study be done on the need for such a school and the best way to provide such a school before the vo-tech board proceeds with its proposal.

The Bergen County Secondary School Principals and Supervisors Association has taken a strong position against the proposed school. Paul Miller, immediate past president of the association, told freeholders that claims that the school would serve Bergen's best and brightest are an "instant turnoff" to administrators.

Supporters of the proposal urged the freeholders to move quickly to back the school.

Bergen Edition

Supt. Mulchahy speaks out for high-tech ed

By Kathleen McDermott
Herald-News Staff Writer

Eugene Mulchahy's rhetorical style might be described as a cross between U.S. Sen. Daniel Patrick Moynihan of New York and Channel 9 TV weatherman Lloyd Lindsay Young.

Mulcahy, Teaneck superintendent of schools, was the most colorful of the Bergen County educators urging the board of freeholders Wednesday to support a proposed high school for advanced science students. The plan has aroused opposition from local principals and superintendents who fear such a school would rob them of their best students and teachers.

"The answer," Mulcahy said, letting his words fall on the approximately 40 educators in the freeholder chambers, "is that we provide students with the best possible circumstances to learn."

Already approved in concept by the county's vocational-technical board of education, the school would offer the county's most talented science students a combination of theoretical courses and hands-on experience with advanced technological equipment too expensive for most local school budgets.

Approval of the freeholder board is not necessary, but Superintendent John Grieco and members of the vo-tech board said they would like as broad a base of support as possible.

"This county has taken the leadership for students with special needs," Mulcahy said of the county's highly regarded programs for the handicapped. "And the mind of the gifted child is also a special need."

The proposal is "visionary," he added. "There is no county issue on which I have received more favorable phone calls."

But while Freeholder Director John F. Curran said he will introduce a resolution endorsing the plan later this month, many of the county's educational leaders were as vocal as Mulcahy in speaking out against the plan.

Paul Miller, assistant principal at Northern Valley Regional High School in Demarest and immediate past president of the Bergen County Secondary School Principals and Supervisors Association, said the school would "affect the total programs that high schools have to offer."

The association in December formally opposed the high-tech school as a "raid" of top students and teachers from local districts.

"We are producing well-rounded students," Miller said of the local districts. "After you review your needs and if you see there is a need for this type of program, I wish you would look first at our neighborhood colleges."

Most colleges offer those courses to advanced high school students with the added enticement of college credit, he added, something a secondary school cannot promise.

Reno M. Zinzarella, superintendent of schools in Westwood, also warned against overspecialization — a trend, he said, resulting in a glut of engineers and technicians in the early 1960s when the Sputnik-induced National Defense Education Act provided special funds for technology-oriented education.

"We produced a tremendous oversupply of engineers, mathematicians and scientists who could not orally present their data," he said. "Our function is to give a broad liberal education. We are not here to specialize — the colleges will tell you that."

The Bergen County Superintendent's Association has urged greater study of the proposal, and association president Anthony Marseglia of Hackensack said one concern of association members is the appropriateness of placing "youngsters 14 years old in a high-tech curriculum."

Grieco said a bill now before the state Senate's education committee and sponsored by Sens. Gerald Cardinale of Cresskill, R-39th, and Matthew Feldman of Teaneck, D-37th, would designate the proposed school an experimental model school and would provide total funding for the first five years of operation.

Bergen County now receives only $493 per student from the state for education compared to the state average of $1,176, Grieco said, and he is optimistic the bill will pass. Should it be defeated, he said, funding could probably be acquired through government and industry grants.

What's more, he said, there may never be a more opportune time to establish such a school.

"This is not an attempt on our part to jump on a fad," he said. "The proper time to put the proposal on the table is right now."

BEST COPY AVAILABLE

8/31/85 - North Jersey Herald-News

Vo-tech chief wants to start gifted school

By Sondra Mermelstein
Staff Writer

Bergen County Vocational-Technical Superintendent John Grieco said at a press conference Friday that he hopes a school for gifted science students will eventually be established based on the quality of services already offered.

Grieco held the conference after an Aug. 26 board meeting, in which members said they would not make any further decisions until "various educational" studies, on the needs for such a program, were available.

Needs, according to the superintendent, should be based on technical changes and recent trends in education. Grieco pointed to the fact that with declining enrollments, municipal schools may want to use the services of the Hackensack vocational high school.

"Lets discuss a need," he said. "How well will the schools do with these gifted and talented students?"

Opponents of the project feel that local school districts would lose many of their brightest students. Gina Ginsburg-Riggs, a supporter and the executive director of the Gifted Child Society in Glen Rock, said she feels the program is "necessary for those limited number of students."

"It would provide them with an option and a choice with facilities that would not be available at their home schools," she added.

The State Education Commissioner Saul Cooperman said a committee would be formed to look into math and science education throughout New Jersey. So far, though, one has not been established.

"We are going to hold off implementation until needs are determined," the superintendent did add.

Special evening, summer and Saturday programs for gifted students, however, may be available, possibly as early as January.

"There are a lot of ways you can decide an issue," Grieco said. "You either go at them directly or circle them."

With the delay in the school, which originally was scheduled to open in September of 1986, Grieco feels the district will be more prepared for a highly technical program in the future.

He also said others will realize the need for a program.

BEST COPY AVAILABLE

9/1/85 - "THE RECORD"

Bergen high-tech high school put on hold

By Joan Verdon
Staff Writer

An ambitious plan for a high-technology high school to serve Bergen County's best and brightest students has been put on hold — at least for the immediate future.

The school — the brainchild of the county's Vocational-Technical School Board and Vo-tech Superintendent Dr. John Grieco — drew strong opposition from local school administrators after it was proposed in January.

The board and Grieco had proposed a high-technology high school modeled after New York's Bronx High School of Science. They wanted it in Hackensack, and ready to open in the fall of 1986.

Grieco said Friday that the vo-tech board decided last week to put the proposal on hold pending further study.

Grieco said the decision was prompted by requests by local superintendents that the proposal be given more study and comments from state Education Commissioner Saul Cooperman that he could not support state funding for the proposal until a statewide study of math and science education is completed.

Vo-tech officials met with Cooperman this summer to determine his position on proposed legislation to fund the high-tech high school.

Grieco said there has been disagreement among local superintendents about the need for such a facility. "We're going to hold off implementation on it until all these needs are determined."

Grieco, a strong advocate of the need for a regional high school to serve the county's gifted youngsters, insisted that "the school by no means is a dead issue."

He said the vocational district will continue to study and develop the concept of a county school of science and technology. The district also plans to begin offering high-tech programs for talented youngsters in afternoons, on Saturdays, or in the summer.

"The public has to get involved and demand this," Grieco said. "A superintendent's lonely voice will never establish it."

Bergen County Freeholder Allen Sklar said yesterday he hopes the proposal will be pursued in the future. "I would hope that a way of resolving the issue can grow out of the postponement. I liked the concept very much."

When vocational officials first proposed the high-tech high school, local superintendents said such a school could hurt their programs by taking bright youngsters out of their high schools. They feared that bright students who remained in local high schools might not be able to have advanced-placement classes in such subjects as physics or calculus because there would not be enough students to support the course.

The Bergen County Superintendents Association this spring voted that more study should be done on the need for such a school before the vo-tech board proceeds with any plans.

A number of superintendents also questioned whether the vocational district is qualified to develop a program for the county's top students.

When the school was first proposed, vo-tech officials had discussed the possibility of using part of a bond issue approved by the county freeholders to build the school.

Grieco said Friday the $6-million bond issue will be used entirely for its original purpose — to upgrade existing facilities — and that there has been no further discussion of using any of that money for a new school.

Grieco also announced Friday that the vo-tech board has decided to close its Norwood satellite school at the end of this school year. Vo-tech officials had predicted earlier this year that the school was likely to close then.

About 150 students from 19 towns in Northeast Bergen County are scheduled to attend the school part time this fall. Students from those towns will attend the Paramus satellite school beginning in September 1986.

The Norwood satellite was opened in 1971 as a "temporary" facility and the board at one time planned to build a new satellite school in the northeast part of the county.

BEST COPY

THE RECORD - July 18, 1985

Teaching ethics to go with the technology

By Joan Verdon
Staff Writer

A generation of whiz kids is learning everything it needs to know about computers — except the difference between right and wrong, according to local educators.

The latest group of youthful computer offenders is another sign that morality must be taught along with technology, they say.

"Somebody's got to directly say to the student, 'You don't copy programs,' 'You don't try to steal someone's files,' 'You don't tie into a pay phone computer so you can release the trigger mechanism and all the coins drop out,'" said John Grieco, superintendent of Bergen County Vocational-Technical Schools and an advocate of computer ethics education.

Computer ethics — moral standards to guide the use of powerful new machines — is a hot topic in high schools and college campuses these days as more cases of computer mischief surface.

Stevens Institute, which in 1982 became the first major educational institution to require its students to own personal computers and now has more than 1,400 microcomputers on its Hoboken campus, this year conducted a special lecture series on the social impact of the computer.

Stevens also recently received a major grant from the National Science Foundation to study "The Ethical Implications of Computer Networking in Science and Government," with a humanities professor appointed chairman of the project.

A proposal by the Bergen Vocational-Technical school board for a new high-technology high school includes a required course called "Value Clarification in the Technological Age."

"Without some kind of value clarification about how you use these new technologies we're going to be lost," Grieco said.

"In the Middle Ages, one would take a knife and stab someone, and one would say that was murder. Today, if we push a button that sends off a missile that kills people, nobody's culpable. The technology has distanced us from the moral act," Grieco said.

Police said parents of the New Jersey youngsters charged with computer crime found it hard to believe their children could be committing serious crimes while sitting quietly in their rooms working with their computer.

Not 'clever and cute'

"It comes across as being almost clever and cute," said Dr. Lance Blackshaw, dean of the College of Science and Engineering at Fairleigh Dickinson University. "And then it gets to the point where it isn't clever and cute."

Dean Blackshaw believes computer ethics should be woven into regular computer courses, rather than covered in separate classes. He prefers that instructors stress ethics as they teach computer skills.

At Stevens, "computer ethics are addressed in many of the courses; however, there is no one particular course devoted exclusively to this topic," said Amy Bass, public relations director.

"I don't really see computer ethics as different from any other kind of ethics," said Stevens faculty member Dr. Donald Sebastian, who uses computers extensively as an associate professor of chemical engineering. "Unfortunately it's a sign of the times — what's yours is mine."

Instances of computer whiz kids raiding files and stealing services are especially disturbing because "you have youngsters with an adult tool. It's like giving the keys to your car to a 5-year-old and letting him go for a joy ride in terms of the damage it can cause," Sebastian said.

"I'm not sure that we're in a position at the college age to teach ethics," said Sebastian. Like others, he said computer ethics should be instilled at an earlier age, to create a sense that just because a youngster knows how to do something, it isn't necessarily right to do it.

"Just because you know how to break into your own house, you don't turn around and break into your neighbor's house because he has a nicer stereo," he said.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

Educating gifted students

THE RECORD - 9/12/85

Editor, The Record:

I was dismayed at the story "Bergen high-tech high school put on hold" in The Sunday Record Sept. 1.

It is a shame that one of the richest counties in the country does not have an institution to improve and nurture the richness of the young mind. New York City has high schools like Bronx Science, Stuyvesant, Hunter, and Music and Art that do just that.

A good competitive environment where bright students can mix with like-minded students and where they can learn under the best teachers the county can afford is essential for developing future scientists, engineers, artists, writers, thinkers, and philosophers.

Local school administrators want more study, but more studies just beget further studies. There is no such thing as an ideal solution. Let us start with something concrete, some good ideas, some good teachers, and some good students. Let us see the effects of this symbiotic relationship. We can always adjust and fine-tune. But let us start now!

This type of school deserves and demands the patronage of forward-thinking educators, businessmen, and state officials.

AMITKUMAR SAHA
Paramus